JVC

SERVICE MANUAL

VHS VIDEO MOVIE

GR-AX7U

V604

CCD
Charge Coupled Device

FULL RANGE AF

Compact VHS
JVC
FULL AUTO
TITLE
T
DISPLAY
MODE
D
COUNTER
RESET
MEMORY

VHS C

HQ
High Quality

videomovie

SPECIFICATIONS *(The specifications shown pertain specifically to the model GR-AX7U for USA.)*

Format	VHS NTSC standard
Power source	DC 6 V ⎓
Power consumption	8 W (Avg.), 1.6 A (Max.)
Signal system	NTSC-type
Video recording system	Luminance: FM recording Color: Converted sub-carrier direct recording Conforms to VHS standard
Cassette	VHS C cassette
Tape speed (SP)	33.35 mm/sec (1-5/16 ips)
(EP)	11.12 mm/sec (7/16 ips)
Recording time	
Max. (SP)	30 minutes (with TC-30 cassette)
(EP)	90 minutes (with TC-30 cassette)
VIDEO	
Output	1 Vp-p, 75 ohms, unbalanced (via AV OUT connector)
S/N ratio	More than 40 dB (with Rohde & Schwarz noise meter)
AUDIO	
Output	–6 dBs, 1 k-ohm (via AV OUT connector).
Microphone input	–68 dBs, high impedance, unbalanced
Pick up	1/3"-format CCD
Minimum required illumination	3 lux (0.3 fc) (at F/1.4)
Illumination range	3 to 100,000 lux (0.3 to 9,300 fc)
Lens	F/1.4, f = 7 to 42 mm, 6:1 power zoom lens with auto iris and macro control, filter diameter 46 mm (with step-up ring)
Viewfinder	Electronic viewfinder with 0.6" black/white CRT
Selectable high-speed shutter	Switchable (1/60, 1/100, 1/250, 1/500, 1/1000, 1/4000 second)
White balance adjustment	Full-auto
Operating temperature	0°C to +40°C (32°F to 104°F)
Operating humidity	35% to 80%
Storage temperature	–20°C to +50°C (–4°F to 122°F)
Weight	760g (1.7 lbs) (without Lens cap, Pad, Finger rest)
Dimensions	162(W) x 116(H) x 106(D) mm (6-7/16" x 4-5/8" x 4-3/16") (incl. viewfinder)

AA-V3U SPECIFICATIONS

Power requirement	U.S. and Canada: AC 120 V∿, 60 Hz Other countries: AC 110 to 240 V∿, 50/60 Hz
Power consumption	22 W
Output	DC 8.5 V⎓, 1.3 A (Charge), DC 6 V⎓, 1.8 A (VideoMovie)
Charging system	Constant current, peak detection, timer controlled
Dimensions	145(W) x 42(H) x 69(D) mm (5-3/4" x 1-11/16" x 2-3/4")
Weight	Approx. 360 g (0.8 lbs)

C-P6U SPECIFICATIONS

Type	VHS cassette adapter
Dimensions	188(W) x 25(H) x 104(D) mm (7-7/16" x 1" x 4-1/8")
Weight	240 g (0.53 lbs)
Accessory	"AA"-size battery x 1

PROVIDED ACCESSORIES

AC power adapter/battery charger	AA-V3U
Battery pack	BN-V14U
A/V output cable	VC-V826U
Cassette adapter	C-P6U
Battery for clock operation	CR2025
Shoulder strap	
Step-up ring	

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

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No. 86113
August 1990

NOTE
- The GR-AX7U is avaliable with 2 body color selections: Black (GR-AX7BKU) and Gray (GR-AX7GYU).
- Packing assembly (Section 6.1) is the only difference among models GR-AX7U for USA/for CANADA.
- For a technical description, plase refer to Technical guide VTG86023 GR-AX7 NTSC.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

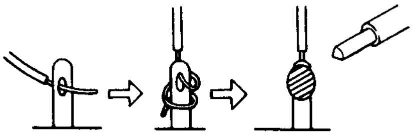


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

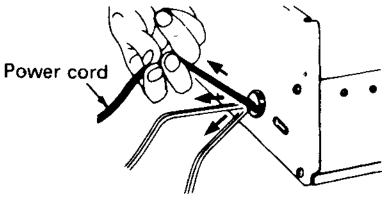


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

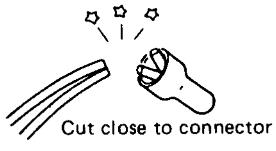


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

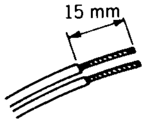


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

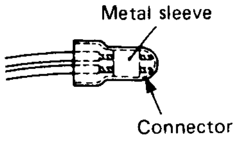


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

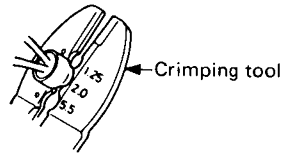


Fig. 6

(5) Check the four points noted in Fig. 7.

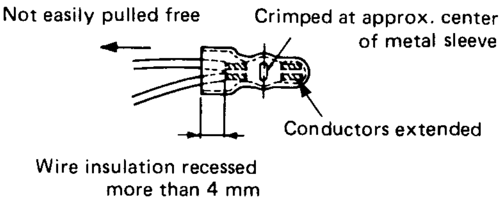

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

• Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

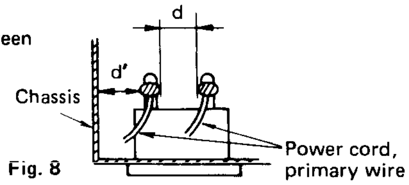


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

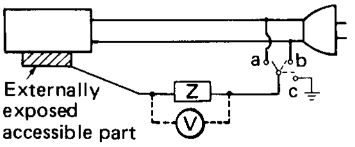


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

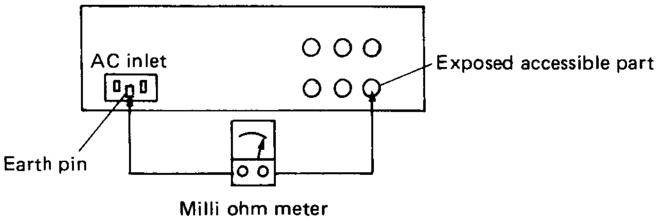


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

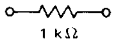
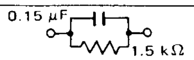
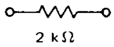
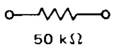
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan		i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada		i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia		i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
			i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

JVC

INSTRUCTIONS

GR-AX7

CAMERA-RECORDER/PLAYER

Specifically for the GR-AX7BKU/GR-AX7GYU/AA-V3U

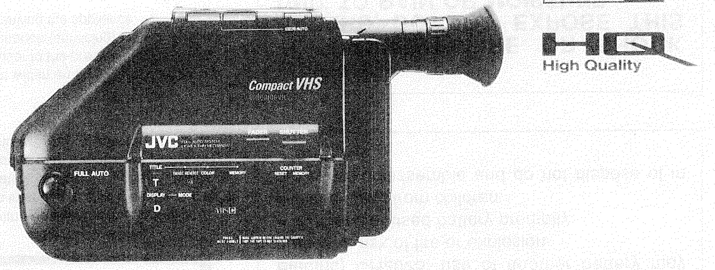
videomovie

VHS C

CCD
Charge Coupled Device

AF
FULL RANGE AF

HQ
High Quality



For Customer Use:
Enter below the Serial Nos. of the GR-AX7BKU, GR-AX7GYU VideoMovie and the AA-V3U AC Power Adapter/Battery Charger.
The former is located on the bottom of the GR-AX7BKU, GR-AX7GYU and the latter, on the bottom of the AA-V3U.

Model No.	GR-AX7BKU	GR-AX7GYU	AA-V3U
Serial No.			

Thank you for purchasing the JVC GR-AX7U Compact VHS VideoMovie. Learn about all the available features and take advantage of them for your total moviemaking enjoyment.
The GR-AX7U is available with 2 body color selections: Black (GR-AX7BKU) and Gray (GR-AX7GYU). This instruction manual covers both versions.
Before using this VideoMovie, read this instruction booklet carefully so that you will obtain the best results from your GR-AX7U.

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SAFETY PRECAUTIONS

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK.
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

The AA-V3U AC Power Adapter/Battery Charger should be used with:
AC 120 V∿, 60 Hz in the USA and Canada,
AC 110–240 V∿, 50/60 Hz in other countries.

CAUTION (applies to the AA-V3U)
TO PREVENT ELECTRIC SHOCK DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

Cassettes marked VHS C can be used with this VideoMovie.

Warning on lithium battery
The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, heat above 100°C (212°F) or incinerate.
Replace battery with Panasonic (Matsushita Electric) CR2025; use of another battery may present a risk of fire or explosion.
- Dispose of used battery promptly.
- Keep away from children.
- Do not disassemble and do not dispose of in fire.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

This equipment should be used with DC 6V ⎓ only.
CAUTION:
To prevent electric shocks and fire hazards, do NOT use any other power source.

NOTES:
- The rating plate (serial number plate) and safety caution are on the bottom of the main unit.
- The rating plate (serial number plate) of the AC power adapter/battery charger is on its bottom.

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Division of US JVC CORP.
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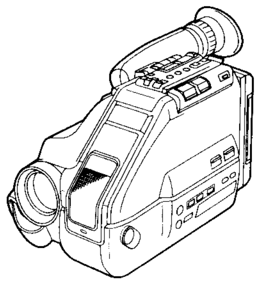
MAJOR FEATURES

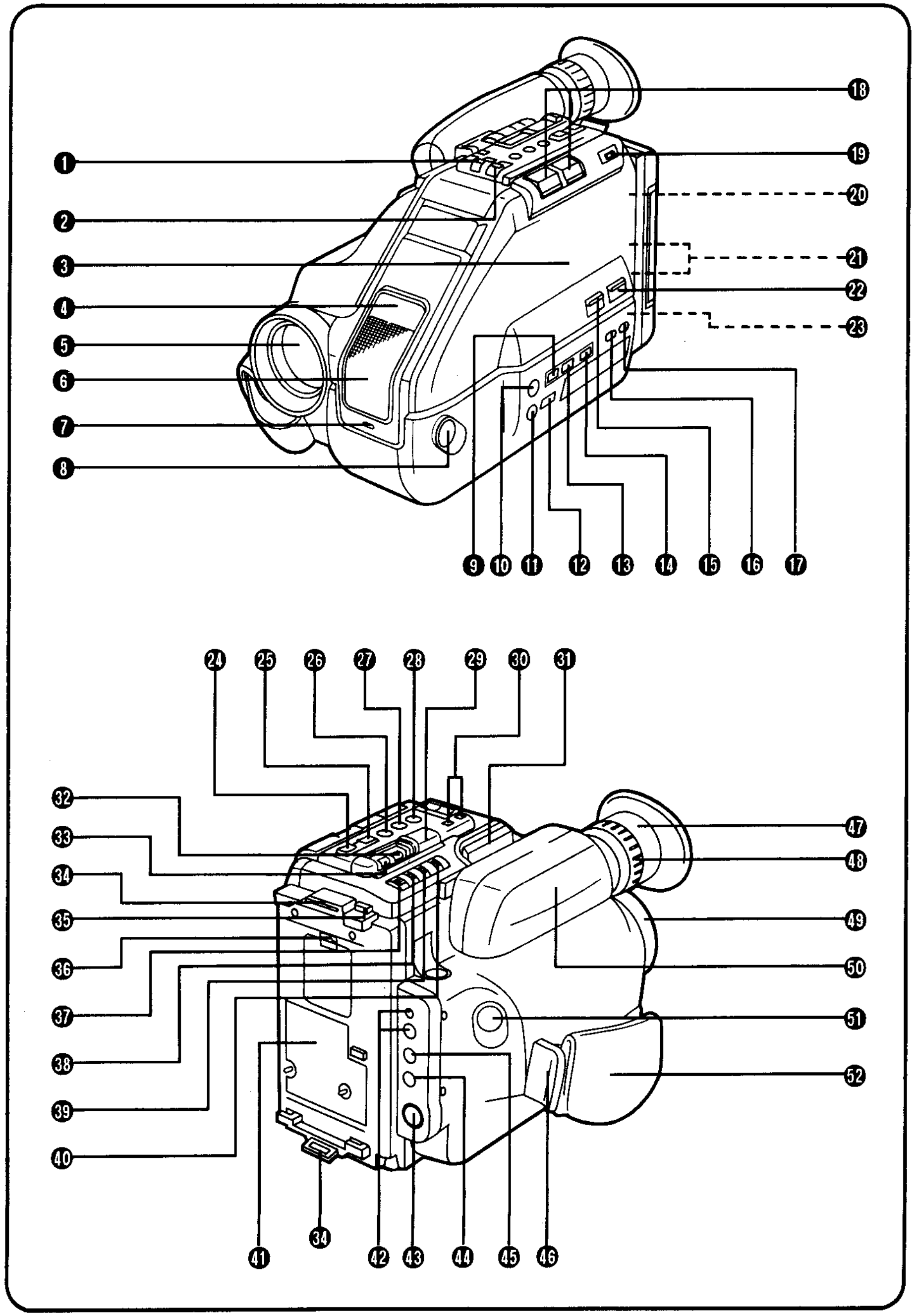
- **Ultra-compact, ultra-lightweight, a mere 1.7 lbs**
- **Full Range AF system with Auto Macro**
- **F1.4, 6x power zoom lens**
- **3-Lux low-light sensitivity**
- **Flying erase head**
- **Multiple-speed shutter with 1/4000-sec. setting**
- **Digital Superimpose (8 colors, nega/posi)**
- **Cinema mode facility**
- **Encore playback**
- **Digital Tracking**
- **Age insertion**



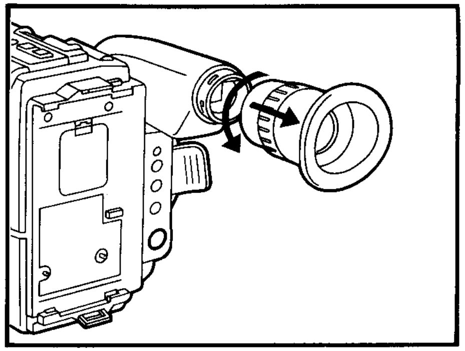
INFORMATION
This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Change or modifications not approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help.

The GR-AX7U is designed to be used with NTSC-type color television signals. It cannot be used for playback with a television of a different standard. However, live recording and viewfinder playback are possible anywhere. Use the BN-V14U/BN-V22U battery packs and, to recharge them, the provided multi-voltage AC power adapter/battery charger. (An appropriate conversion adapter may be necessary to accommodate different designs of AC outlets in different countries.)

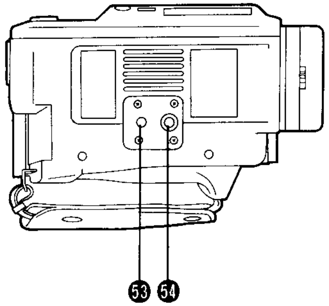
CONTROLS AND CONNECTORS

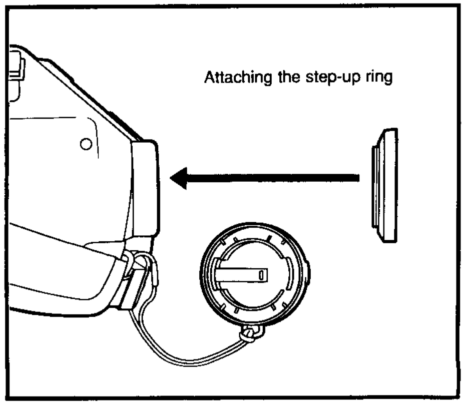


No.		Page
①	EJECT switch	7
②	POWER switch	7
③	Cassette holder	7
④	White balance sensor window	
⑤	6:1 zoom lens	
⑥	Exclusive microphone	
⑦	Tally lamp	10
⑧	FULL AUTO button	13
⑨	IMAGEREVERSE/CINEMA button	17
⑩	TITLE ON/OFF button	17
⑪	DISPLAY ON/OFF button	11
⑫	DISPLAY MODE button	11
⑬	TITLE COLOR button	17
⑭	TITLE MEMORY button	17
⑮	FADER button	16
⑯	COUNTER RESET button	20
⑰	COUNTER MEMORY button	20
⑱	MANUAL FOCUS (–/+) buttons	13
⑲	FOCUS MANU/AUTO select button	13
⑳	TAPE REMAIN switch	10
㉑	DATE/TIME SET (–/+) buttons	8
㉒	SHUTTER mode button	15
㉓	DATE/TIME SELECT button	8
㉔	FF/RETAKE button	11,19
㉕	REW/RETAKE button	11,19
㉖	EDIT/Q.REVIEW button	10,24
㉗	PAUSE/MONITOR button	10
㉘	ENCORE button	20
㉙	Control panel cover	9
㉚	Manual tracking (–/+) buttons	20
㉛	Power zoom buttons	13
㉜	PLAY button	19
㉝	STOP button	19
㉞	Eyelets for shoulder strap	26
㉟	BATTERY RELEASE button	5
㊱	Clock battery compartment	8
㊲	Recording mode select switch	9
㊳	DUBB. ON/OFF switch	24
㊴	ALARM ON/OFF switch	10
㊵	TRACK. AUTO/MANU select switch	20
㊶	Battery pack mount	5
㊷	External microphone jack	26
㊸	AV OUT connector	22
㊹	REMOTE control jack	27
㊺	Earphone jack	
(51)	Recording Start/Stop button	9
㊻	Thumb rest	
㊼	Eyepiece	7
㊽	Dioptric adjustment control	7
㊾	Lens cap	3
㊿	Electronic viewfinder	7
(52)	Grip strap	7
(53)	Stud hole	26
(54)	Tripod mounting socket	26



Cleaning the eyepiece
The viewfinder eyepiece can be removed for cleaning. Turn the eyepiece counterclockwise and pull it out.





Step-up ring:
For attaching an ND filter, etc. (See page 33.)

VIEWFINDER INDICATIONS

Fading

FADER............Fade function engaged
—FADER—..........Fade function in progress
No indication.....Fade function not operated

Focus

AF/OFF: Manual focus mode engaged
▶●◀: Low-contrast warning

Shutter speed

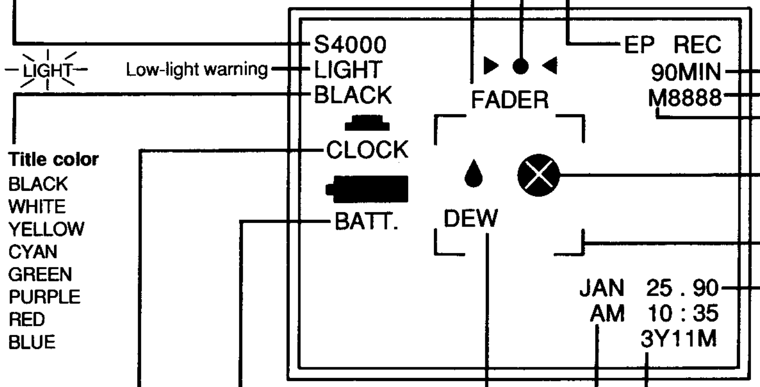
S4000:	1/4000-sec. shutter speed selected
S1000:	1/1000-sec. shutter speed selected
S500:	1/500-sec. shutter speed selected
S250:	1/250-sec. shutter speed selected
S100:	1/100-sec. shutter speed selected
S60:	1/60-sec. shutter speed selected
No indication:	Auto (1/60-sec. or 1/100-sec.) mode selected

Operation mode*

REC:	Recording in progress in SP mode
EP REC:	Recording in progress in EP mode
—:	Record-Standby mode (SP mode)
EP —:	Record-Standby mode (EP mode)

Remaining tape time

Tape counter



Counter memory indication

Head clog warning

Auto-focus detection zone indication

Title color
BLACK
WHITE
YELLOW
CYAN
GREEN
PURPLE
RED
BLUE

Age
Year/month

Date
Month/day/year

Lithium battery warning

Condensation warning

Time
12-hour indications with AM or PM
AUTO DATE: Auto Date Record engaged

Low-battery warning

ON-SCREEN DISPLAY

The viewfinder indications can also be displayed on the screen of a monitor connected to the GR-AX7U.

- Connect the VideoMovie to a video monitor. Press DISPLAY MODE. The viewfinder indications appear on the monitor screen. (See page 11.)
- The on-screen display is available in the Rehearsal or Record-Pause mode.

---

* "CASSETTE" appears if no cassette is loaded, or if a cassette with its safety tap removed is loaded.

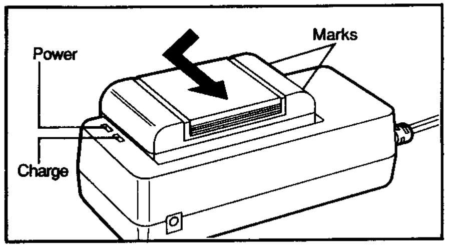
POWER SUPPLY SYSTEM

The convenient 4-way power supply system gives you a choice of the most appropriate power supply unit, depending on the application.

WITH BATTERY PACK

The battery pack has been kept in the uncharged state for shipment. Therefore, before use, be sure to charge it.

Charging procedure



AC power adapter/battery charger AA-V3U

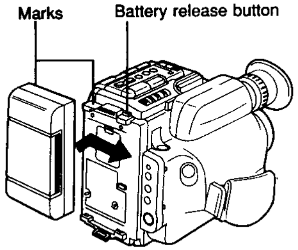
1. Connect the AC power cord to a wall outlet. (The POWER indicator will light)
2. Align the marks on the battery pack and adapter.
3. Slide the battery pack in the direction of the arrow until it locks in place.
4. When charging is completed, the CHARGE indicator that is red turns green.

- The charging time differs depending on the ambient temperature and the condition of the battery pack.

Charging time

BN-V14U: 80 min.	BN-V22U: 130 min.

Attaching the battery pack



- Before attaching the battery pack, insert the provided lithium battery. (See page 8.)

1. Align the battery pack over the outline in the battery pack mount.
2. Slide the battery pack into place in the direction of the arrow, unit it locks into place.

- To remove the battery pack, press the BATTERY RELEASE button and slide out the battery.

Recording time for the GR-AX7U

BN-V14U: 55 min.	BN-V22U: 100 min.

- The recording time per charge is influenced by the duration of recording standby, frequency of zooming, etc. It is safer to have spare battery packs.

PRECAUTIONS

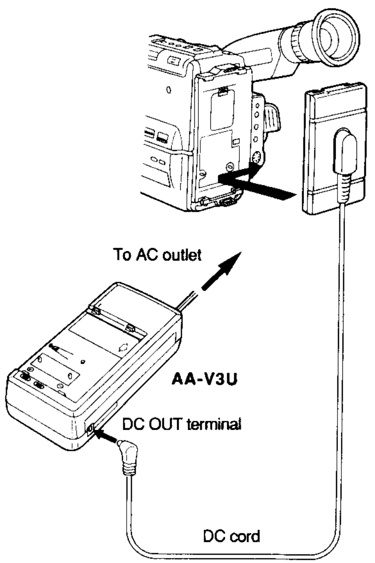
- If used near a radio, the provided AA-V3U AC power adapter/battery charger may interfere with reception.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not disassemble or modify the unit.
- Do not apply shocks to the unit.
- Do not subject the unit to direct sunlight.
- Avoid using the unit in extremely hot or humid places.
- Avoid using the unit in places subject to vibrations.

CAUTIONS

- No function is available without power supply.
- Do not use any power supply other than specified.
- Never attempt to use these power supply units with any equipment other than the VideoMovie.

WITH AC POWER

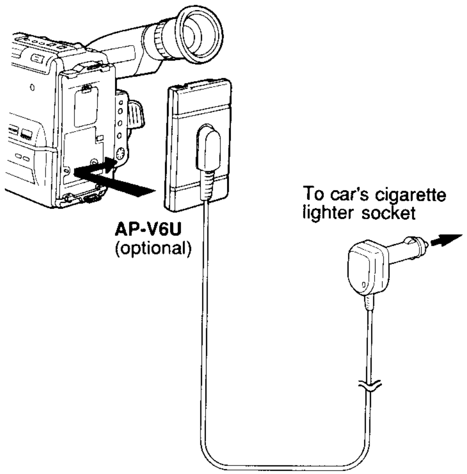
Use the provided AA-V3U AC Power Adapter/Battery Charger.



IN A CAR

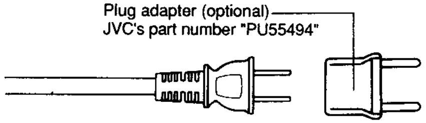
Use the optional AP-V6U Car Battery Cord.

- Leave the car's engine idling when using the car battery. (For use with 12 V negative-grounded cars only.)



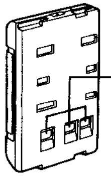
When using the AA-V3U in areas other than the USA

USING HOUSEHOLD AC PLUG ADAPTER
In case of connecting the unit's power cord to an AC wall outlet other than American National Standard C73 series type use an AC plug adapter, called a "Siemens Plug", as shown.
For this AC plug adapter, consult your nearest JVC dealer.



A WORD ON THE EXCLUSIVE BN-V14U/V22U BATTERY PACKS

The BN-V14U/V22U are nickel-cadmium batteries. Be sure to carefully read the caution attached to the battery pack.



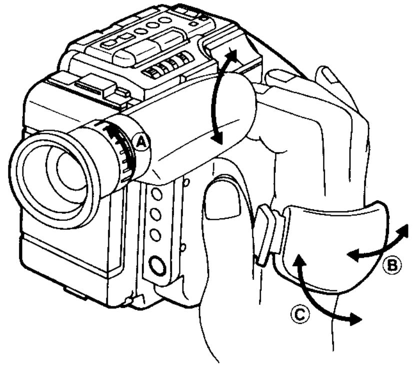
Temperature ranges:

The recharging time is based on room temperature of 20°C.
The lower the temperature, the longer the recharging time.

For charging: 10°C to 35°C (50°F to 95°F)
For operating: 0°C to 40°C (32°F to 104°F)
For storing: –10°C to 30°C (14°F to 86°F)

BASIC PREPARATIONS

Diopter adjustment control



POSITIONING THE VIEWFINDER

The viewfinder can be positioned for best viewability.

DIOPTER ADJUSTMENT

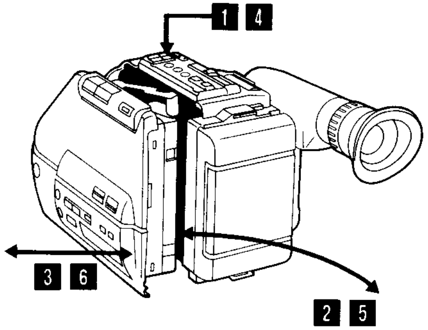
The viewfinder lens can be adjusted to suit the operator's eyesight by turning the diopter adjustment control (Ⓐ).

- First supply power, and engage the Rehearsal or Record-Pause mode.

ADJUSTING THE GRIP STRAP

1. Separate the Velcro strip to expand the loop (Ⓑ Ⓒ).
2. Pass your right hand through the loop and grasp the grip. Adjust the length of the strap to suit your hand size and refasten the Velcro strip.

LOADING AND UNLOADING A CASSETTE



LOADING

1. Open the cassette holder by pressing the EJECT switch.
2. Insert the cassette with its label facing outward.
3. Close the cassette holder by pushing its center area.

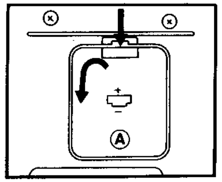
UNLOADING

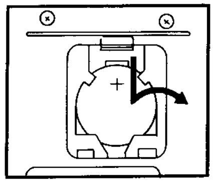
4. Press the EJECT switch. The cassette holder will open.
5. Remove the cassette.
6. Close the cassette holder by pushing its center area.
   - When not in use, switch off power.

Notes:

- Ensure that tape is not slack inside the cassette, then load the cassette correctly. See page 35.
- Do not repeat loading and unloading of the cassette without running the tape, as this will slacken the tape, causing tape damage.
- The cassette holder can be opened even when the power is off.

DATE/TIME SETTING





Note:
- Replace battery with Panasonic (Matsushita type) CR2025 only. Use of another battery may present risk of fire and explosion.

Warning on lithium battery
- Dispose of used battery promptly
- Keep away from children
- Do not disassemble and do not dispose of in fire.

LITHIUM BATTERY

The provided lithium battery powers the clock operation and date/time/age insertion function.

Battery insertion

1. Open the CLOCK battery compartment cover on the rear of the VideoMovie (Ⓐ in the figure.)
2. Insert the provided lithium battery with the plus (+) side up.
3. Close the cover on the unit until it clicks.

Battery replacement

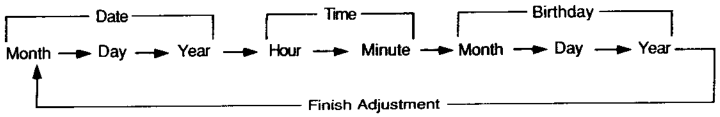
The battery lasts for about one year. When the lithium battery warning (CLOCK) appears in the viewfinder, this battery needs to be replaced. Obtain a new CR2025 lithium battery and perform the following procedure.

1. Remove the battery by pressing the knob in the direction of the arrow.
2. Insert the new CR2025 with the plus (+) side up.
3. Close the cover back until it clicks.

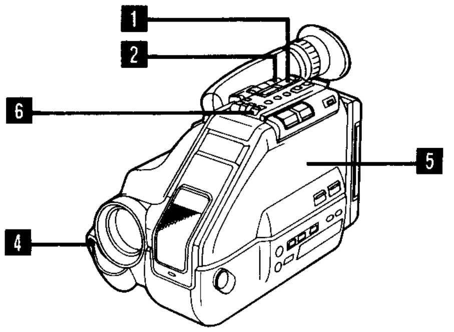
SETTING DATE/TIME/BIRTHDAY

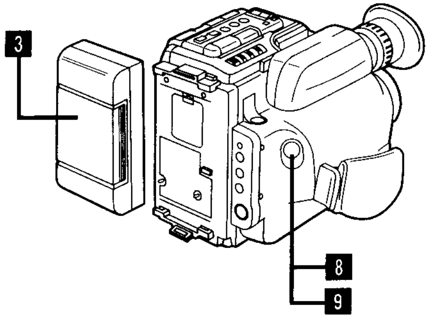
Before adjusting the date, time and birthday for the first time or after replacing the batteries.

1. Switch the unit's power on. Then, slide the EJECT switch to open the cassette holder.
2. Press PAUSE/MONITOR button to enter the Rehearsal mode.
3. Press the DATE/TIME SELECT button—the month blinks.
4. Press the DATE/TIME SET button to choose the correct month.
5. Press the DATE/TIME SELECT button to select the next item to change, with the item selected changing in the sequence below:
   If the DATE/TIME SELECT button is kept pressed for more than 1.5 seconds, this will call up items rapidly for setting, and stop at the item where the button is released.
6. Procedures in steps 3 and 4 allow you to set Date and Time. After the Time has been set proceed to the Birthday setting.
   Setting the "Birthday"
   The GR-AX7U is provided with a "Birthday" memory function so that once someone's date of birth is entered in memory, the unit displays and records his or her age, automatically calculated and expressed in "xxY (years) xxM (months)" on the scenes.
7. Make the settings for the items of BIRTHDAY as described in steps 3 and 4.
8. After all items have been set, press the DATE/TIME SELECT button, and blinking will stop. The Date, Time and Age will be displayed.
   Notes:
   - When the Date/Time/Birthday is set for the first time, after inputting the "BIRTHDAY" data, the Date, Time and Age (automatically calculated based on the BIRTHDAY data) appear.
   - The clock begins timekeeping when the minute portion stops blinking and remains constantly lit. While the Date and Time are blinking, the clock does not keep time. Be sure to confirm the correct time when setting the Birthday.



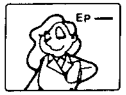
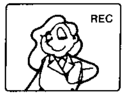
RECORDING OPERATION



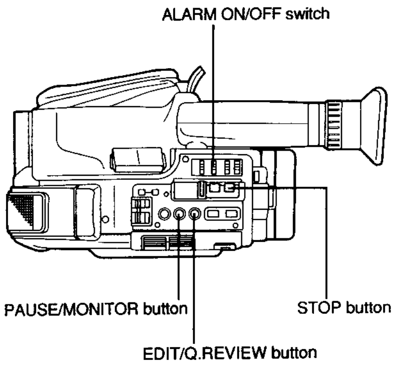


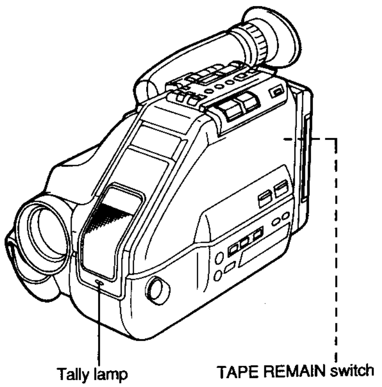
1. Set the control panel cover to CAMERA.
2. Set the SP/EP recording mode select switch as required.
3. Supply power. (Battery pack or AC power adapter or car battery charger. See pages 5 and 6.)
4. Adjust the grip strap. See page 7.
5. Insert a video cassette correctly. See page 7.
6. Slide the POWER switch to turn power on. The unit enters the Record-Standby mode. (The aimed-at scene will appear on the viewfinder screen.)
7. Determine the composition by referring to the viewfinder image.
8. Press the Recording Start/Stop button. The recording mode indication will appear and the recording starts.
   - During recording, the tally lamp lights continuously.
9. To stop recording temporarily, press the Recording Start/Stop button once again.
   - To restart recording, press the Recording Start/Stop button.

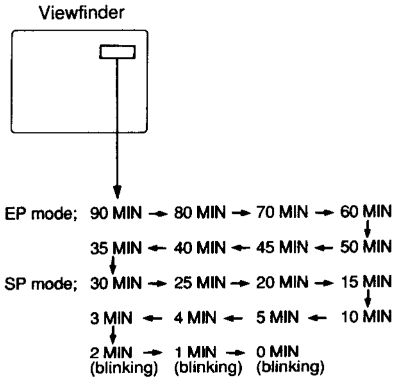
Viewfinder indications

Record-Standby mode	Recording mode
"–" or "EP—"	"REC" or "EP REC"
	

Notes:
- For a longer pause, slide the POWER switch to off to save power.
- If the Record-Standby mode continues for longer than about 5 minutes, the unit switches itself off automatically. To restart recording, turn the power on and press the Recording Start/Stop button. This makes clean assembled recordings possible even after a long pause.
- Repeating steps 8 and 9 produces assemble recordings.
- To end recording, slide the control panel cover to "PLAY". After making sure that the tape has stopped, slide the POWER switch to off.


ALARM ON/OFF switch
PAUSE/MONITOR button
STOP button
EDIT/Q.REVIEW button


Tally lamp
TAPE REMAIN switch


Viewfinder
EP mode; 90 MIN → 80 MIN → 70 MIN → 60 MIN
35 MIN ← 40 MIN ← 45 MIN ← 50 MIN
SP mode; 30 MIN → 25 MIN → 20 MIN → 15 MIN
3 MIN ← 4 MIN ← 5 MIN ← 10 MIN
2 MIN (blinking) → 1 MIN (blinking) → 0 MIN (blinking)

* — MIN... (Now calculating)

REHEARSAL

If you wish to rehearse shooting angles, compose scenes, etc., without actually recording on the tape, set the control panel cover to "PLAY", and press the PAUSE/MONITOR button.
The aimed-at scene will appear on the viewfinder screen.

- Rehearsal is possible whether a cassette is loaded or not.
- With a cassette loaded, rehearsal is not possible during rewind or fast forward.
- The power save circuit does not function during rehearsal. (For power save function, see page 12.)

TRIGGER ALARM

When the ALARM ON/OFF switch is set to ON, an electronic alarm beeps when the Recording Start/Stop button is pressed to begin recording.
The electronic alarm beeps twice when the Recording Start/Stop button is pressed for record pause. This alarm helps prevent recording errors.

TALLY LAMP

Lights to show that the recording is in progress.

QUICK REVIEW

- If you want to review the end of the last recording for confirmation, press the Q.REVIEW button from the Record-Standby mode; the tape will be rewound for about 2 seconds of program time and played back automatically for this section, after which it will stop in the Record-Standby mode for the next shot.

Note:

- Distortion might occur when playback starts. This is normal.

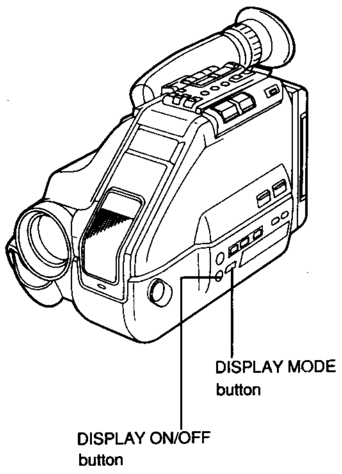
REMAINING TAPE TIME INDICATION

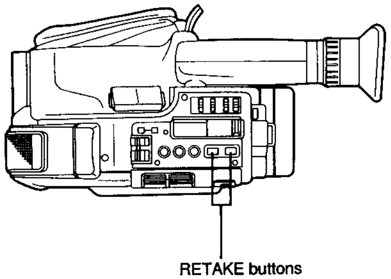
The remaining tape time is displayed in the viewfinder as shown.

- Set the TAPE REMAIN switch according to the tape used.
  TC-20: When using a tape with 20-minute recording time (TC-20 type) or less.
  TC-30: When using a tape with recording time of more than 20 minutes.

Notes:

- The indication will start blinking when the remaining tape time reaches 2 minutes.
- The indicated remaining time is approximate.
- The time required to calculate the remaining tape length and the accuracy of the calculation may vary according to the type of tape used.


DISPLAY MODE button
DISPLAY ON/OFF button


RETAKE buttons

RETAKE

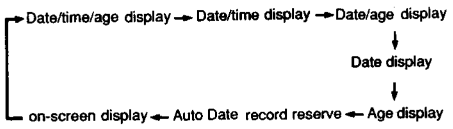
After viewing a recorded segment, you may decide to re-record it immediately. The Retake function is convenient for this.

1. Make sure the VideoMovie is in the Recording-Standby mode. (If not, engage the mode.)
2. Press either RETAKE button to reach the point where you wish a new recording to start. When the RETAKE button is released, the camera will enter the Record-Standby mode again.
3. Press the Recording Start/Stop button to start recording.

Note:
Noise may appear during Retake.
This is normal.

DATE/TIME/AGE RECORDING

The date/time/age can be displayed and recorded according to the selected mode. Press the DISPLAY MODE button to cycle through the modes in the following order:


Date/time/age display
Date/time display
Date/age display
Date display
Age display
Auto Date record reserve
on-screen display

- When the auto-date-record function is selected, "AUTO DATE" appears in the viewfinder until recording begins. As long as this function is chosen, the date will be automatically displayed and recorded for about 5 seconds following the first operation of the Recording Start/Stop button after the power is turned on.
- Auto date record reserve indication will cease to be displayed, if the DISPLAY ON/OFF button is set to OFF unless power is reapplied.

Date/time recording indications

Date/time/age display	Date/time display	Date/age display
DEC. 25.90 PM 11:59 10Y11M	DEC. 25.90 PM 11:59	DEC. 25.90 10Y11M

Date display	Age display
DEC. 25.90	10Y11M

AUTO DATE record reserve	
AUTO DATE	DEC. 31.90
Auto date record reserve	Auto date record executed

WARNINGS

ASSEMBLE RECORDING TECHNIQUES

1 To replace the battery pack during recording

1. If the battery warning appears in the viewfinder while recording, stop recording by setting the POWER switch to OFF, not the STOP button.
2. Replace the battery pack with a charged one.
3. Set the POWER switch to ON.
   - The unit will be in the Record-Standby mode.
4. Press the Recording Start/Stop button to start recording.

2 To record onto a partially recorded tape

1. Play back the tape to a point where you wish a new recording to start.
   - Use the SHUTTLE SEARCH button for faster location.
2. Press the PAUSE/MONITOR button at the located point.
   - The unit will enter the Still mode.
3. Slide the control panel cover to "CAMERA".
4. Press the Recording Start/Stop button to start recording.

POWER SAVE AND TAPE PROTECTION CIRCUIT

- To save battery power, the VideoMovie (when battery operated) switches itself off automatically in the following situations:
  (1) When left for longer than 5 minutes in the Stop mode.
  (2) When left for longer than 5 minutes in the Record-Standby (Record-Pause) mode.
- To protect the tape, the VideoMovie (regardless of whether battery-operated or AC-powered) releases tape tension slightly and switches itself off automatically if left for longer than 5 minutes in the Record-Standby (Record-Pause) mode.
- For the same reason, the VideoMovie enters the Stop mode if left for longer than 5 minutes in the Still (Play-Pause) mode.

Battery operation

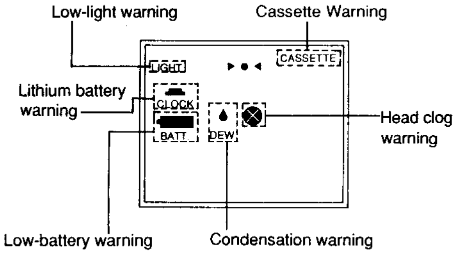
STOP → POWER OFF

Battery/AC operation

RECORD PAUSE → POWER OFF

5 minutes

PLAY PAUSE (STILL) → STOP



BATTERY WARNING

- When the battery power is coming to an end, a battery warning indication appears in the viewfinder. Replace the battery pack with a fully charged one.
- After indication appears, the power turns off automatically. In this state, however, sliding the POWER switch while holding EJECT button pressed turns the power on and ejects the cassette.

LOW-LIGHT WARNING

- If the blinking "LIGHT" indicator appears on the viewfinder screen, the amount of light is insufficient. Increase the lighting.

LITHIUM BATTERY WARNING

- Blinks when the lithium battery is not in place or exhausted. In this condition, no date/time function is available.

CONDENSATION WARNING

- Appears when the excessive moisture condensation occurs inside the unit.

CASSETTE WARNING

- Blinks to warn that no cassette or a cassette without safety tab is inserted.

HEAD CLOG WARNING

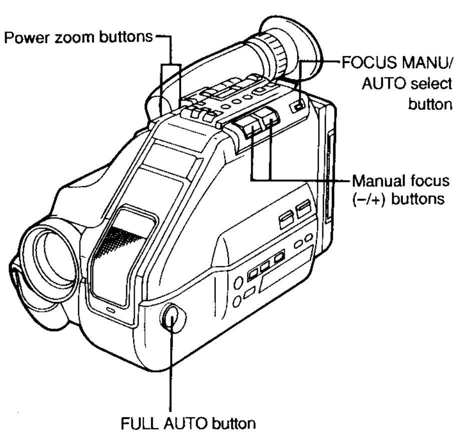
- Appears when video head clogging occurs. Proceed as follows.

1. Stop recording and slide the control panel cover to "PLAY" to unload the tape. Then return the cover to the "CAMERA" position to reload the tape.
2. Use the RETAKE buttons to locate the end of the previsouly recorded section.
3. Press the Recording Start/Stop button to resume recording.

Note:

- The GR-AX7U incorporates an automatic head cleaning function which operates each time the cassette is loaded and unloaded. However, even after this operation, if the head clog warning indication does not go off, try it a few more times. If the indication still remains displayed, consult your nearest JVC Dealer.

ADVANCED VIDEOGRAPHY TECHNIQUES



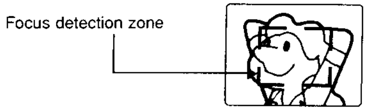
Note:

- If the lens is smeared with stains or blurred with condensation, accurate focusing is not possible. Keep them clean. If they become dirty, wipe with a piece of soft cloth. When condensation occurs, dry them by wiping with a soft cloth or wait for conditions in which they become dry.

1 FOCUSING

Auto-focus

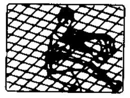
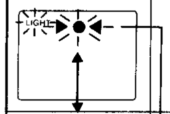
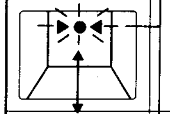
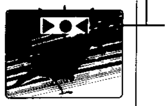
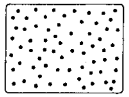
- The rectangular focus area, always shown by the indicators in the center of the viewfinder, detects focus.



CAUTION

- When not in use, do not leave the VideoMovie in the Auto-focus mode with power on; otherwise light entering the lens will operate the auto-focus mechanism, consuming power.

- Correct focus may not be obtained in the following situations. In such case manual focusing should be performed to obtain proper focus.

	Two subjects at different distances overlap in the same scene.
	Low illumination.
	The subject has no contrast (differences in brightness and darkness), such as a flat, one-color wall, or a clear, blue sky, for instance.
	Low-contrast warning A dark object is barely visible in the viewfinder
	Minute patterns or identical patterns that are regularly repeated.

Manual focus

For manual focus operation, proceed as follows:

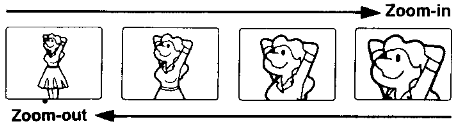
1. Press the FOCUS MANU/AUTO select button to release the Auto Focus mode. The Manual Focus indication appears in the viewfinder.
2. Zoom in on a subject by pressing the "T" button.
3. Focus onto it by pressing either manual focus button.
4. Determine the composition by pressing the "W" button.

Notes:

- To release the Manual Focus mode (to engage the Auto Focus mode), press the FOCUS MANU/AUTO select button or FULL AUTO button.
- When you use the Manual Focus mode, be sure to focus the lens in the maximum telephoto position. If you focus in on a certain subject in the wide-angle position, sharply-focused images cannot be obtained when zoomed up because the depth- of-field is reduced at longer focal lengths.

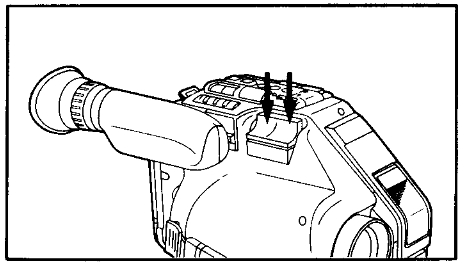
[2] ZOOMING

When the focal length of the lens is varied by pressing the power zoom buttons, the image appears to come nearer to or retreat from the viewer.



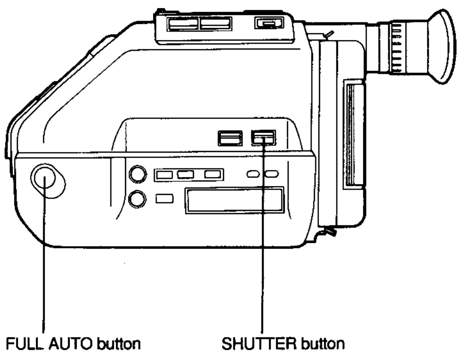
Procedure

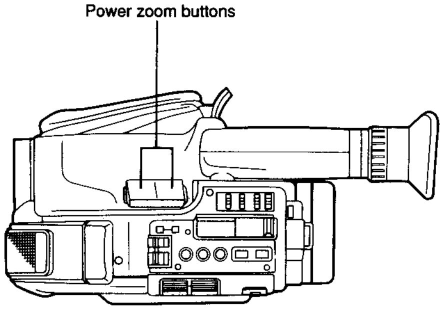
- Press "T" for zooming in and "W" for zooming out.



Notes:

- Focusing may become unstable during the zooming-in operation. In this case, first zoom in in the Recording Standby mode then, after pressing the FOCUS button to hold the focus fixed, zoom in or out in the Record mode.
- When shooting low-contrast subjects in the Zoom-in mode, the Videomovie automatically zooms out with the low contrast indicator blinking and focus being performed.





[3] MACRO SHOT

The GR-AX7U's Full Range AF system can offer continuous shooting ability from close-up to infinity.

Procedure for Macro shooting

1. Press the "W" power zoom button until the lens zooms out completely.
2. Position the subject in auto-focus detection zone.

- For best results, increase illumination when shooting in the Macro mode.

[4] MULTIPLE-SPEED ELECTRONIC SHUTTER

The GR-AX7U is equipped with a selectable high-speed shutter that allows better recording of quick movements for sharp, clear stills or slow-motion playback.

Select it when taping fast-action shots that you will want to play back later on a VCR equipped with the Still or Slow-motion mode.

1. Press the SHUTTER button to switch to the desired electronic shutter speed. This can be done while Recording or in any other mode. It continues at the selected speed until switched to another speed.
2. Select the shutter speed among 1/4000, 1/1000,1/500, 1/250, 1/100, 1/60 and Auto (1/60 or 1/100) second by pressing the shutter speed changes in the following order:

Auto (no indication) → S60 (1/60) → S100 (1/100) → S250 (1/250)
↑ ↓
S4000 (1/4000) ← S1000 (1/1000) ← S500 (1/500)

- When selected, the High-Speed Shutter mode is indicated on the viewfinder screen.
- In the Auto mode, usually the shutter speed is set to 1/60 sec., but changes to 1/100 sec. whenever flickering caused by light sources such as fluorescent lamp is detected.

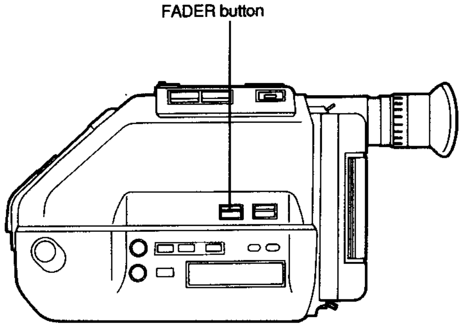
3. When finished recording the fast-action scene, switch back to the standard shutter speed by pressing the SHUTTER button until the SHUTTER indicator in the viewfinder disappears.

Notes:

- The High-Speed Shutter mode requires slightly more subject illumination than the Auto or S60 Shutter mode. Therefore, the low-light warning may blink in the viewfinder. If so, switch to the Standard Shutter mode.
- Picture color may be adversely affected in the High-Speed Shutter mode when the subject is lit by alternating discharge-type light sources such as fluorescent or mercury-vapor lights.
- When playing back a section recorded in the High-Speed Shutter mode, movement of subjects in the picture may not be smooth. This is not due to any defect of the unit.
- Pressing the FULL AUTO button also restores the shutter speed to the Auto mode.

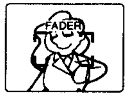
5 FADER

The GR-AX7U incorporates a fader function which allows smooth video/audio fade-in and fade-out with a white blank screen. The fader is simultaneously activated with the Recording Start/Stop button operation.

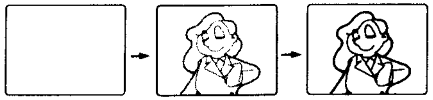


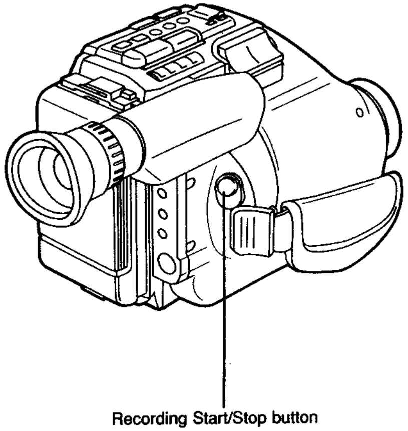
1 FADE-IN

1. Aim the VideoMovie to the subject in the Record-Standby mode, then press the FADER button to engage the Fade-Standby mode. "FADER" appears on the viewfinder screen.



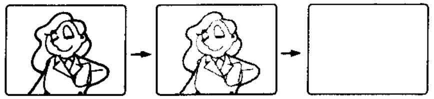
2. Press the Recording Start/Stop button. The screen immediately becomes blank and recording begins. Fade-in starts at the moment the Recording Start/Stop button released. "FADER" in the viewfinder blinks until the fade-in is completed. If the button is not released, the screen will remain blank and be recorded (with no audio) as long as the button is kept pressed.





2 FADE-OUT

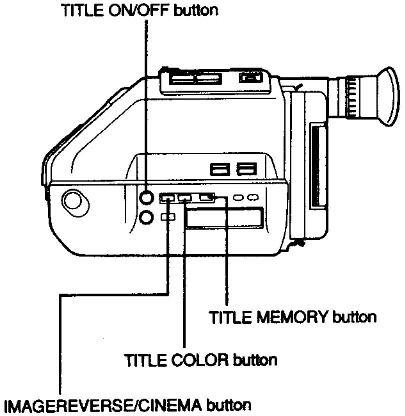
1. Start shooting as usual.
2. Press the FADER button to engage the Fade-Standby mode. "FADER" appears on the viewfinder screen.
3. Press the Recording Start/Stop button. The viewfinder indications start blinking. Fade-out starts and will be completed in about 4 seconds. When completed, the VideoMovie enters in the Record-Standby mode automatically. At this time, if the button is not released, the screen will remain blank and be recorded as long as the button is kept pressed.



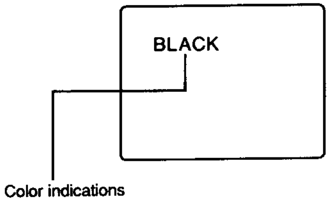
Note:
- Viewfinder indication ("FADER") is not recorded.

6 DIGITAL SUPERIMPOSE

The GR-AX7U's Digital Superimpose function allows a title to be superimposed on a recording in a choice of 8 colors and either positive or negative (reversed) style for more creative video opportunity.



Viewfinder Indications



→ BLACK → WHITE → YELLOW → CYAN

BLUE ← RED ← PURPLE ← GREEN ←

STORING A TITLE

1. Put the VideoMovie into the Record-Pause or Rehearsal mode.
   - When the " CLOCK " indication (lithium battery warning) appears in the viewfinder, titles cannot be stored. Insert the lithium battery, or replace the inserted one with a new one according to the instructions on page 8.
2. Press the TITLE ON/OFF button.
3. Aim the lens at your title in as well-lit a location as possible.
   - If, at this point, the stripes or an old title appearing in the viewfinder prove bothersome, press the TITLE ON/OFF button to turn it off.
   - When storing a title, the scene visible in the viewfinder may differ slightly from that which will be recorded on the tape.
4. Press the TITLE MEMORY button for about 1 second to store the title.
   - When a title is stored poorly, check to see that the lighting is adequate and that the title is drawn with bold strokes, then shoot the title again.
   - Every time the TITLE MEMORY button is pressed, the previously recorded title stored in that page of memory will be erased, and replaced with the new title.
5. Press the COLOR button to select the color in which you want your title to appear.
6. Press the IMAGEREVERSE/CINEMA button to choose negative or positive style.
   - The TITLE MEMORY button works in both the Record-Pause and Rehearsal modes; care should be exercised not to press TITLE MEMORY accidently as this will erase stored titles.

Creating titles

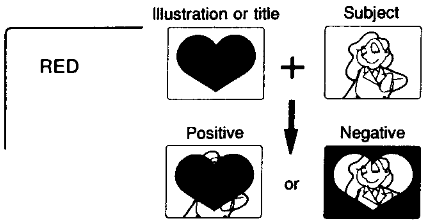
Make note of the following guidelines to assure best results.

1. Create titles using dark colors on light backgrounds—black writing on white paper, for example.
2. Letters should be drawn with broad strokes.

SUPERIMPOSING A TITLE

① **Making a title at the beginning of a recording**

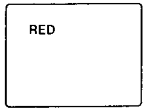
1. Put the VideoMovie into the Record-Pause mode.
2. Press the TITLE ON/OFF button to display your title on the viewfinder screen.
3. Confirm the color, and the positive/negative style. Color choice and positive/negative style can be changed at this point. Press the COLOR button to select a different color, and the IMAGEREVERSE/CINEMA button to choose positive/negative style.



4. Press the unit's Recording Start/Stop button to begin recording. The title will now be mixed with what you are recording.
   Press the TITLE ON/OFF button when you wish to end the titled portion of your recording.

② **Inserting a title in the middle of a recording**

1. Confirm the color, and positive/negative style of your title.
   Press the TITLE ON/OFF button to turn it off.



2. Shoot your live scene by pressing the Recording Start/Stop button.
   Press the TITLE ON/OFF button when you wish to insert your title. It will be inserted into your ongoing recording at exactly that point.
3. Press the TITLE ON/OFF button again to stop inserting your title with the action you are recording.

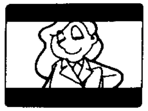
Notes:
- With title off, press the COLOR button to check the page color for about 3 seconds.
- Color choice and positive/negative selections can be changed when the title is displayed in the viewfinder.
- The "Color" indication displayed in the viewfinder will not be recorded on the tape.
- When the lithium battery for the unit's clock is exhausted, the stored title will be lost.

7 CINEMA MODE RECORDING

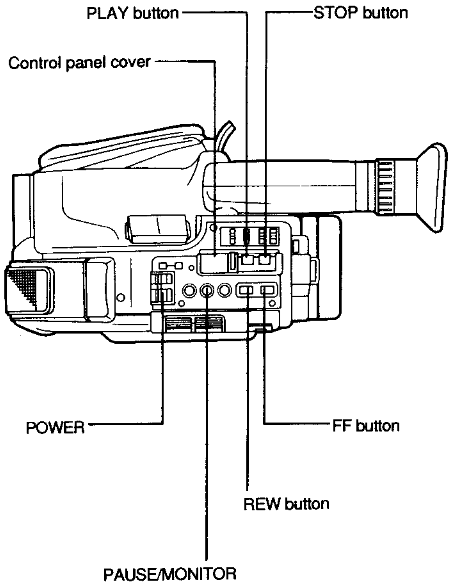
The GR-AX7U incorporates a "Cinema" mode recording function which allows you to record black bars at the top and bottom of the screen to produce cinema-like "wide-screen" effects.

1. Set the TITLE ON/OFF button to OFF. Then engage the Record-Pause mode.
2. Press the IMAGEREVERSE/CINEMA button.
   - To restore the normal screen, press the IMAGEREVERSE/CINEMA button again.
   - When in the Cinema mode, pressing the TITLE ON/OFF button to ON superimposes the already-stored title into the cinema-effect screen. At this time, selection of the nega/posi style is possible.

Notes:
- The Cinema mode can be engaged only in the Record-Pause, Record or Rehearsal mode.
- When the title is displayed (with the TITLE ON/OFF button set to ON), engaging the Cinema mode is not possible.



PLAYBACK



The GR-AX7U permits playback of recorded "VHS-C" video cassettes.
For connections refer to pages 22 and 23.

Preparations
- With a television equipped with audio/video input connectors, engage the Video (or AV) mode of the television.
- With a regular television, set the antenna select switch of the RF-V3U RF unit to VIDEO and the television's channel selector to your video channel (specified AV channel).

1. Connect a power supply unit. (Battery or AC operation: see pages 5 and 6.)
2. Slide the control panel cover to "PLAY".
3. Slide the POWER switch to turn power on.
4. Insert a pre-recorded VHS-C cassette.
   - Ensure that tape is not slack inside the cassette, then load the cassette correctly. See page 35.
5. Press PLAY button. Playback will start.

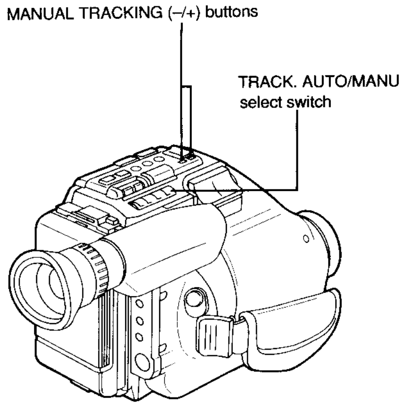
STILL PLAYBACK

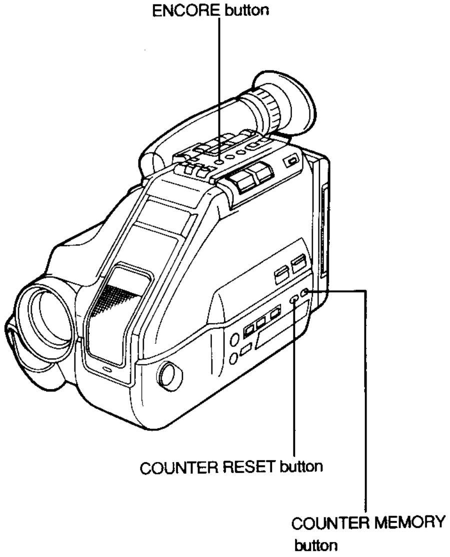
Press the PAUSE/MONITOR button during playback. The picture will stop on the screen.
- After about 5 minutes of still playback, the VideoMovie enters the Stop mode automatically for tape protection and switches itself off.

SHUTTLE SEARCH

1. Fast-speed playback in the forward direction
   Press the FF/RETAKE button in the Play mode. Playback will be speeded up to 3 times normal speed in the SP mode, 7 times in the EP mode.
2. Fast-speed reverse playback
   Press the REW/RETAKE button in the play mode. The tape will be played back in the reverse direction at 3 times normal speed in the SP mode, 7 times in the EP mode.

Notes:
- For brief fast-speed searching, keep the FF or REW button pressed for more than 2 seconds; when you release the button, the Search mode will be cancelled.
- Noise bars will appear and pictures may become monochrome while in these modes. This is not due to any defect of the unit.





DIGITAL TRACKING

Digital Tracking adjustment is performed automatically to obtain optimum pictures during playback. Adjust the tracking manually when noise bars appear on the screen.

Manual tracking

Manual tracking might be more effective, depending on video cassette being used.

1. Set the TRACK. AUTO/MANU select switch to "MANU" to enter the Manual Tracking mode.
2. Adjust to the best picture possible by pressing either MANUAL TRACKING (–/+) button.

Notes:

- When re-engaging the Automatic Digital Tracking mode, set the TRACK. AUTO/MANU select switch to "AUTO".
- For tapes recorded on another deck, tracking adjustment might not be effective.

COUNTER MEMORY FUNCTION

The GR-AX7U incorporates a counter memory function which facilitates locating a specific tape segment.

1. Press the RESET button to reset the counter to "0000".
2. Press the MEMORY button. The "M" mark will appear.
3. After recording or playback, press the STOP button, then the REW button. The tape will automatically stop at the counter reading of around "0000".
4. Press the PLAY button to start playback.

Notes:

- The counter memory function is effective in the Fast Forward mode as well.
- To cancel the memory function, press the MEMORY button.

ENCORE PLAYBACK

The Encore function allows instant replay of a scene.

- Press the ENCORE button during playback. The tape is rewound for approx. 10 seconds of program time, then replay starts.

USING THE CASSETTE ADAPTER

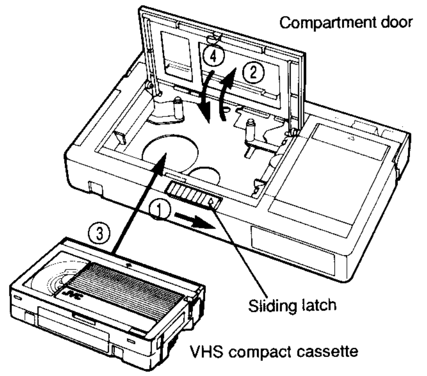
By using the provided Cassette Adapter, a VHS-C video cassette recorded with this VideoMovie can be played back with any deck-type VHS video recorder. Also, a VHS-C video cassette installed in the cassette adapter is fully compatible for both recording and playback on any deck-type VHS video recorder.

Note:

- Only compact video cassette tapes marked VHS-C can be used with the Cassette Adapter.

- **C-P6U Cassette Adapter**

Being battery-operated, the C-P6U performs tape loading and unloading automatically.

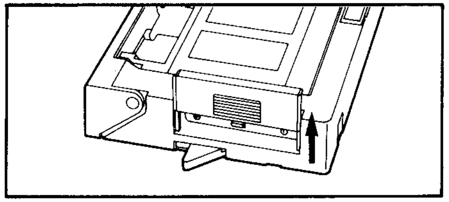


Note:

- During special-effects playback (slow motion, still frame, etc.) the picture may vibrate or noise bars may appear on the screen.

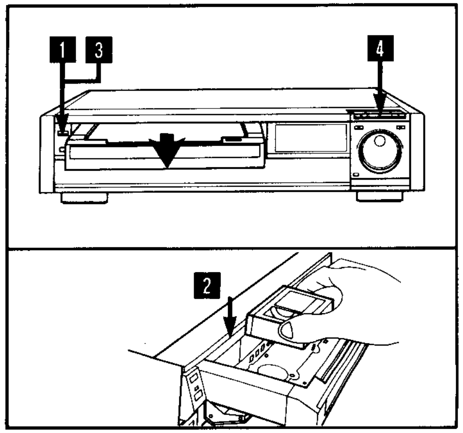
Inserting the battery into the cassette adapter

1. Remove the battery cover by sliding it up.
2. Install one "AA" battery and reattach the cover.



USING THE VHS/VHS-C COMPATIBLE VCR

A VHS/VHS-C compatible VCR can directly play back a VHS-C cassette without using a cassette adapter.
(VHS/VHS-C compatible VCR such as the JVC HR-SC1000U)



1. Press the OPEN/CLOSE button.
2. Place a cassette on the tray.
3. Press the OPEN/CLOSE button again.
4. Press the PLAY/x2 button. Playback starts.

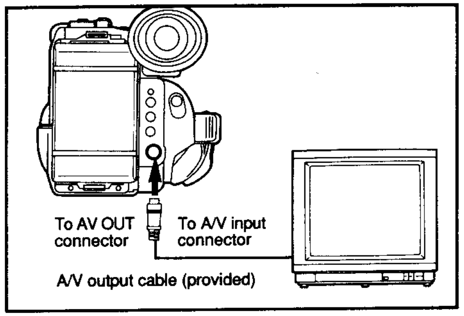
- When using a VHS/VHS-C compatible VCR, read the instruction manual of the VCR carefully.

CONNECTIONS TO A TELEVISION FOR PLAYBACK

1 Connection to a television equipped with A/V input connector

In this situation, use the provided A/V output cable.

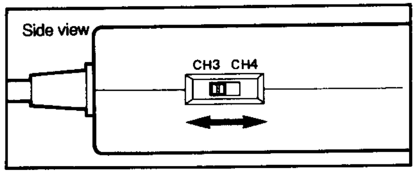
- Simply connect the AV OUT connector of the GR-AX7U to the A/V input connector of the television.
- Use the Video (or AV) mode specified on the television, in stead of tuning to channel 3 or 4.


To AV OUT connector
To A/V input connector
A/V output cable (provided)

2 Connection to a television not equipped with A/V input connector

In this situation, use the optional RF-V3U RF unit.

1 Set the out put channel select switch of the RF-V3U to CH3 or CH4.


Side view
CH3 CH4

- The RF unit permits playback of the video and audio recordings through a TV receiver. The signals from the RF unit are viewed through a vacant channel not used for broadcasting in your area.
- The RF unit has been set to CH3 prior to shipment. Reset the channel to CH4 (using a screwdriver) in areas where channel 3 is employed for broadcasting.
- This is your video channel. To view video cassettes, always set the TV channel selector to either channel 3 or 4.

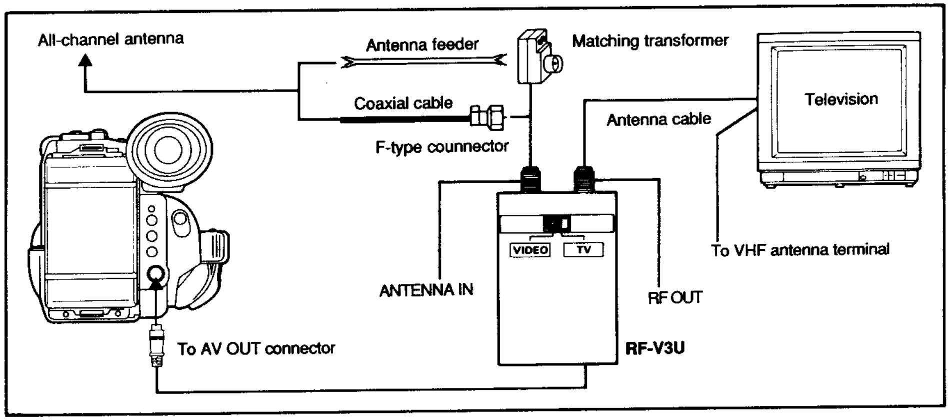
PRECAUTIONS FOR RF-V3U

- For exclusive use with the VideoMovie.
- Do not disassemble or remodel the RF-V3U.
- Do not expose it to strong shocks.
- Unplug the connected equipment during lightning storms. (Never touch the antenna cable.)

2 Remove the antenna cable from the TV receiver.

3 Connect the antenna cable to the ANTENNA IN terminal of the RF unit.

- Refer to the connection diagram on the next page.


All-channel antenna
Antenna feeder
Matching transformer
Coaxial cable
F-type counnector
Antenna cable
Television
VIDEO
TV
ANTENNA IN
RF OUT
To VHF antenna terminal
To AV OUT connector
RF-V3U

4 Connect the RF OUT terminal of the RF unit to the 75-ohm coaxial antenna terminal of the television using the provided antenna cable.

5 Connect the VIDEO/AUDIO INPUT cable of the RF unit to the AV OUT connector of the GR-AX7U

OPERATION

Viewing video cassettes being played back with the GR-AX7U

To view video cassettes or to monitor the recording, set the VIDEO/TV switch of the RF channel selector to the channel corresponding to the RF-output channel (3 or 4).

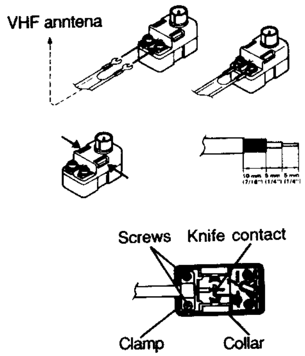
Viewing television programs

Set the VIDEO/TV switch to TV, and the TV receiver will function as usual.

How to affix the matching transformer to your VHF antenna cable

- If your VHF antenna cable is a 300-ohm flat feeder, connect the two lugs to the screws in an ordinary manner.
- If your VHF antenna cable is a 75-ohm coaxial cable, proceed as follows:

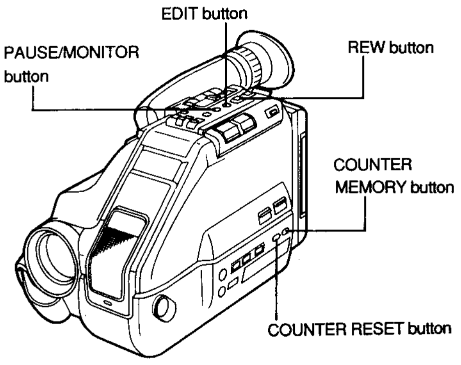
1. Press both side tabs inward and slide the cover off.
2. Strip the coaxial cable with a pair of wire strippers, a knife, or the like as shown.
3. Remove the collar and put it on the pole inside the cover.
4. Loosen the screw for the clamp and insert the stripped cable so that the braided portion is positioned under the clamp.
5. Inset the stripped end (core conductor) of the cable from above into between the knife contacts.
6. Tighten the screws.
7. Replace the cover.

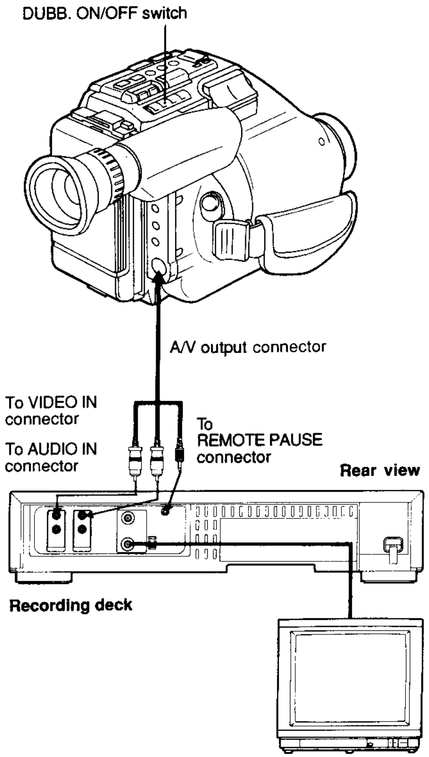

VHF anntena
Screws
Knife contact
Clamp
Collar

EDITING TECHNIQUES

1 MASTER EDIT CONTROL SYSTEM (Assemble Editing) (When using a JVC VCR equipped with a Remote Pause terminal)

This feature functions only when using a designated JVC VCR equipped with a Remote Pause terminal. The Master Edit Control system enables control of the VCR via the VideoMovie's controls, for quality preroll editing without transition-point gaps and distortion.


EDIT button
PAUSE/MONITOR button
REW button
COUNTER MEMORY button
COUNTER RESET button


DUBB. ON/OFF switch
A/V output connector
To VIDEO IN connector
To AUDIO IN connector
To REMOTE PAUSE connector
Rear view
Recording deck

Preparation

- Connect the GR-AX7U and the recording deck as in the diagram on the left.
- Turn on both the GR-AX7U and the recording deck.
- Correctly insert the appropriate cassettes into the GR-AX7U and the recording deck.

1. Engage the recording deck's Record-Pause mode. (At this time, the tape in the deck winds backward for 1.3 seconds.)
2. Set the DUBB. ON/OFF switch of the GR-AX7U to ON.
3. Engage the GR-AX7U's Play mode to locate the edit-out point on the tape. When this point is reached, press PAUSE/MONITOR.
4. Press COUNTER RESET on the GR-AX7U then press COUNTER MEMORY. "M, 0000" will appear in the viewfinder.
5. Press REW to locate the edit-in point. When it is reached, engage the Still mode.
6. Press EDIT on the GR-AX7U to start editing.

- At this time, the GR-AX7U and the recording deck carry out the following procedure automatically.
  1) The GR-AX7U prerolls the tape for 5 seconds then starts playback to stabilize the tape run.
  2) After the GR-AX7U has played back for 3.7 seconds, it sends a command signal to the recording deck. The deck then starts playback together with the GR-AX7U for 1.3 seconds.
  3) When the GR-AX7U's tape reaches the edit-in point, the deck starts recording in synchronization with it.

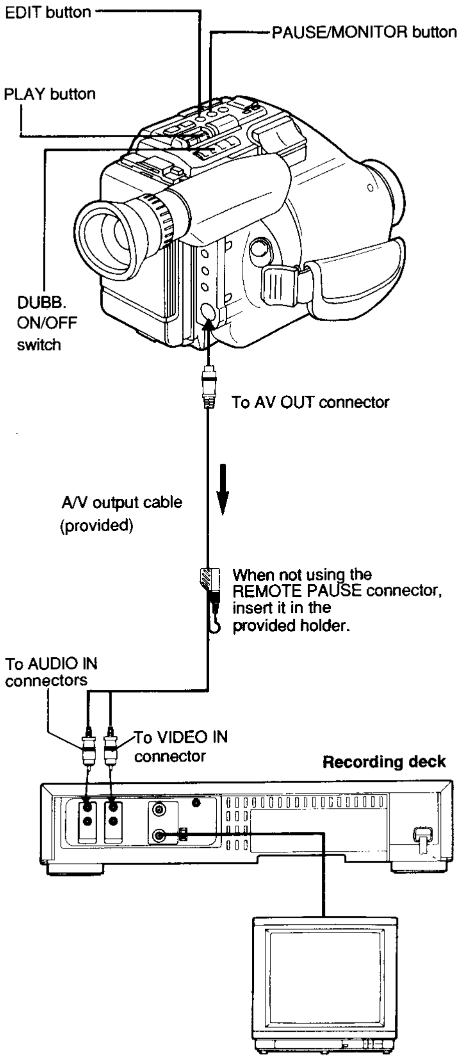
Note:
- There are some VCRs which are not compatible with the Master Edit Control system.

7. When the GR-AX7U's tape reaches the edit-out point (counter reading of "0000"), the VideoMovie enters the Still mode and the recording deck enters in the Record-Pause mode automatically.

- Repeat these steps as required.
- When the tape reaches the preset edit-out point during the dubbing operation, it may stop slightly before or after the designated point on the tape.

2 TAPE DUBBING (Dubbing to a second recorder)

In order to preform simple dubbing of an entire tape, proceed as follows.


EDIT button
PAUSE/MONITOR button
PLAY button
DUBB. ON/OFF switch
To AV OUT connector
A/V output cable (provided)
When not using the REMOTE PAUSE connector, insert it in the provided holder.
To AUDIO IN connectors
To VIDEO IN connector
Recording deck

Preparations

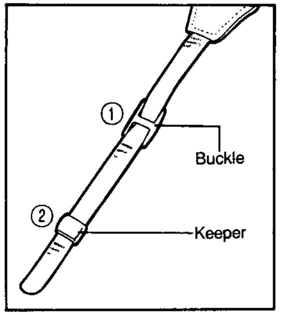
- Make connections according to the diagram on the left.
- Turn on all components' power.
- Correctly insert the appropriate cassettes.
- Set the DUBB. ON/OFF switch to ON.

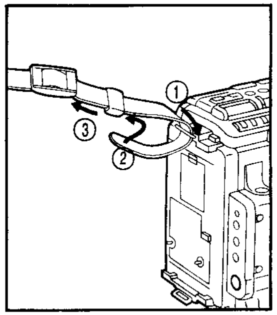
1. Engage the connected recorder's Record-Pause mode, and press the GR-AX7U's PLAY and PAUSE/MONITOR buttons together to engage its Pause mode.
2. Press the GR-AX7U's PLAY button and engage the connected recorder's Recording mode to start dubbing. (The GR-AX7U starts playback; the recorder starts recording.)
3. To edit out unwanted material, engage the recorder's Record-Pause mode.

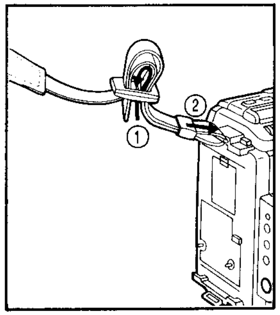
- If using with a JVC VCR equipped with a Remote Pause terminal, perform as follows:
  1) Make connections according to the diagram on the left.
  2) Engage the connected recorder's Record-Pause mode.
  3) Press the EDIT button of the GR-AX7U. The deck's recording begins in synchronization with the GR-AX7U's playback start.

USING ACCESSORIES

ATTACHING THE SHOULDER STRAP (provided)

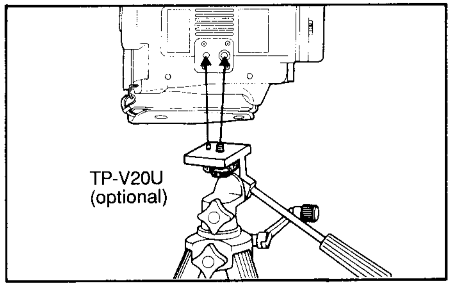

①
Buckle
②
Keeper





1. Slide the strap buckle and strap keeper off the end of the strap. Replace them on the strap: the buckle first ①, then the keeper ②.
2. Loop the end of the strap over the top of the eyelet ①, then, folding it back, thread the end of the strap first through the keeper ②, then the buckle ③. Making sure that the strap is not twisted, repeat the above procedure to attach the other end of the strap to the other eyelet.
3. Adjust the shoulder strap to the desired length ①, then slide both keepers up snug against the eyelets to prevent the strap from slipping ②.

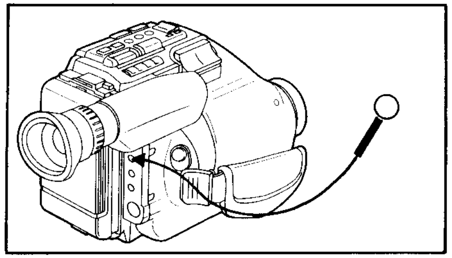
TRIPOD MOUNTING


TP-V20U
(optional)

Align the screw and camera direction stud of the tripod with the camera's tripod mounting socket and stud hole, and firmly tighten the screw.

EXTERNAL MICROPHONE

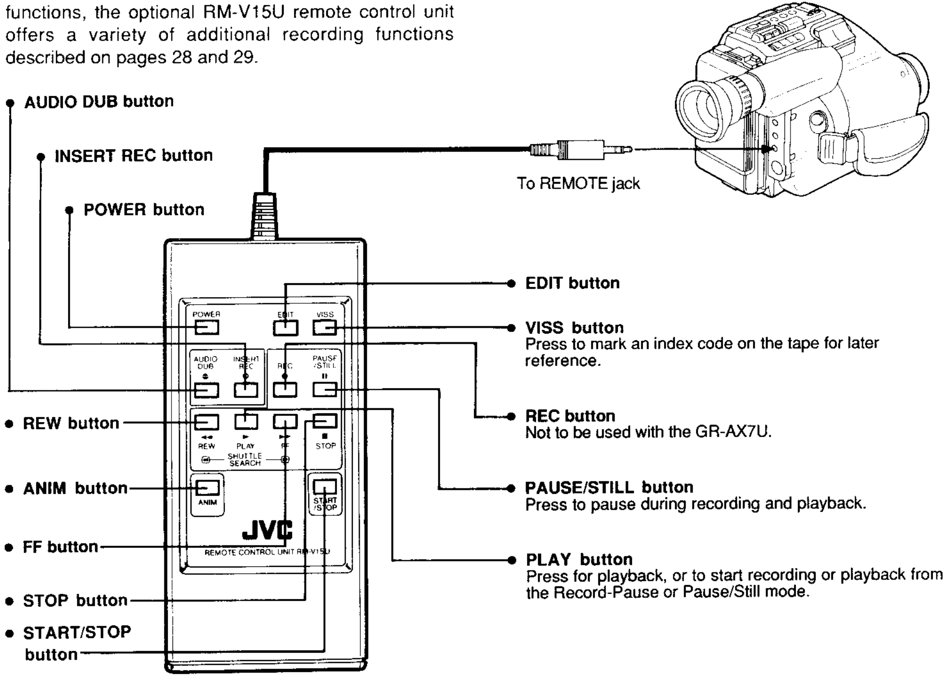
To use another microphone, do the following:



Plug the external microphone's cord into the MIC jack.

REMOTE CONTROL UNIT RM-V15U (optional)

In addition to operation of the GR-AX7U's basic deck functions, the optional RM-V15U remote control unit offers a variety of additional recording functions described on pages 28 and 29.


AUDIO DUB button
INSERT REC button
POWER button
REW button
ANIM button
FF button
STOP button
START/STOP button
To REMOTE jack
EDIT button
VISS button
REC button
PAUSE/STILL button
PLAY button
POWER
EDIT
VISS
AUDIO DUB
INSERT REC
REC
PAUSE/STILL
REW
PLAY
FF
STOP
SHUTTLE SEARCH
ANIM
START/STOP
JVC
REMOTE CONTROL UNIT RM-V15U

- **EDIT button**
- **VISS button** Press to mark an index code on the tape for later reference.
- **REC button** Not to be used with the GR-AX7U.
- **PAUSE/STILL button** Press to pause during recording and playback.
- **PLAY button** Press for playback, or to start recording or playback from the Record-Pause or Pause/Still mode.

RM-V15U's buttons	Functions	
	With the GR-AX7U's control panel cover set to "CAMERA"	With the GR-AX7U's control panel cover set to "PLAY"
POWER button	POWER switch	POWER switch
EDIT button	Q. REVIEW button	EDIT button
VISS button	VISS button	—
AUDIO DUB button	—	AUDIO DUB button
INSERT REC button	—	INSERT button
REC button	—	—
PAUSE/STILL button	REC PAUSE button	PAUSE/MONITOR button
REW button	RETAKE (R) button	REW/SEARCH button
PLAY button	REC START button	PLAY button (start button)
FF button	RETAKE (F) button	FF/SEARCH button
STOP button	—	STOP button
ANIM button	ANIM button	—
START/STOP button	REC START/STOP button	START button

- Functions of the RM-V15U's control buttons vary depending on the GR-AX7U's control panel cover position as specified on the left.

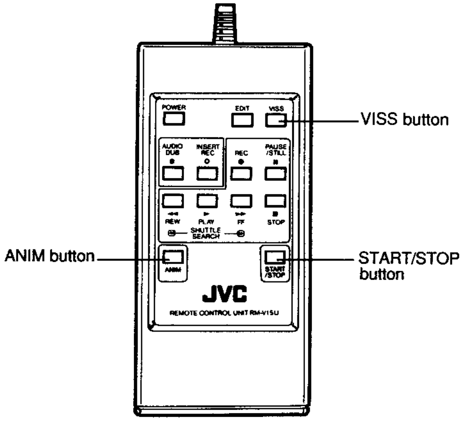
Installing the batteries

1. Slide the battery compartment cover on the rear of the unit.
2. Insert 2 "AA-size" batteries (provided) in the correct directions into the battery compartment.
3. Replace the cover.

Precautions

- Avoid violent shocks, especially take care not to drop the unit.
- Take care not to allow liquid to spill into the unit.
- Do not place heavy objects on the unit.
- Avoid leaving the unit in places subject to direct sunlight or extremely high temperatures.

SPECIAL RECORDING FUNCTIONS VIA THE OPTIONAL RM-V15U



1 INDEX CODE MARKING

The VHS Index Search System (VISS) gives you automatic access to any point you select on a recording. Only the marking aspect of the Index Search System is included in this unit. It allows index codes to be placed on recorded tape for convenient dubbing or editing on VCRs with an Index Search function.

- Press the VISS button once to put an index code onto the tape. The INDEX mode indication blinks in the viewfinder during the marking process.
- When the "INDEX" indication appears in the viewfinder, no VideoMovie functions can be executed.
- If the VISS button has been pressed in the Record-Pause mode, an index code is put at the point where the Recording Start/Stop button is pressed.

Notes:

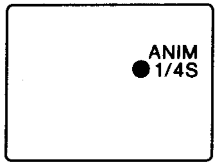
- Keep the VideoMovie steady in one position when filming the series of shots for best results. Mounting the VideoMovie on a tripod is recommended.
- Before recording in the Animation mode at the very beginning of a tape, set the VideoMovie to the Recording mode for about 5 seconds, so that the tape runs smoothly. Using the Fade-in function at this point is a good way to begin an animated program.

2 ANIMATION

The Animation function produces the illusion of movement in otherwise stationary scenes or objects. This technique is accomplished by shooting a series of slightly different pictures of the same scene or slightly different poses of the same object for a brief period of time.

1 Set the Recording mode switch to "SP".
2 Put the VideoMovie in the Record-Pause mode.
3 Press the ANIM button.

- The following information will appear in the viewfinder with an initial setting for 1/4S to show the camera is set to record for about 1/4 second.



Viewfinder

4 Press the REC TIME button again to select the desired recording time. The following sequence of time setting is displayed with each press of the button:

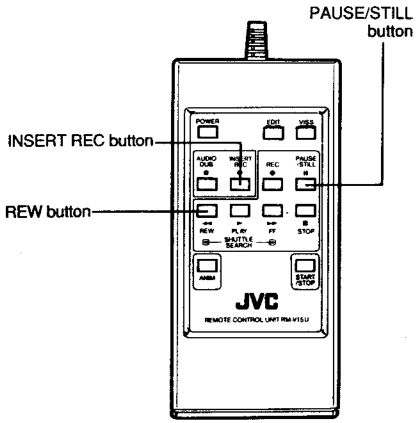
→ 1/4S → 1/2S → 1S → (regular recording mode) ↵

5 Press the Recording Start/Stop button after focusing the VideoMovie on the subject.
- Recording stops automatically in the Record-Pause mode after the selected period of time.

6 Repeat step 5 for the required number of pictures.
7 Playback the recorded series to check if results were satisfactory.
8 Release the Animation mode by pressing the ANIM button until the "ANIM" indicator in the viewfinder disappears, or slide the control panel cover to "PLAY".
- The Animation mode can only be engaged from the Record-Pause mode.

3 INSERT EDITING

Insert editing means recording a new scene into a section of prerecorded tape so that a part of the original recording can be replaced with a new sequence without excessive picture distortion at the edit-in and edit-out points. In the Insert Edit mode, the original audio on the audio track remains unchanged.



1 Locate the desired edit-out point on the VideoMovie's tape and press PAUSE/STILL.
2 Press RESET to obtain a "0000" reading, then press MEMORY to obtain an "M" indication in the viewfinder.
3 Press REW to rewind the tape a little beyond the beginning of the scene your wish to insert.
4 Press PAUSE/STILL exactly at the beginning of the scene you wish to insert.
5 While holding INSERT REC pressed, press PAUSE/STILL. The VideoMovie enters the Insert Edit mode with the scene at which the VideoMovie is aimed appearing on the screen for monitoring.
6 Press the Recording Start/Stop button to insert the new sequence.
7 When the counter reading of "0000" is reached, insert editing stops automatically and the VideoMovie enters the Playback mode.

Notes:

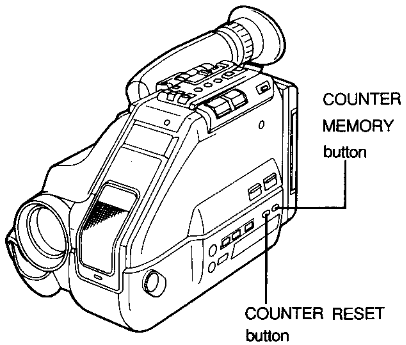
- When in the Still mode, the counter indication may be blurred. This is normal.
- When the tape reaches the preset edit-out point during the editing operation, it may stop slightly before or after the designated point on the tape.
- Only video signals are recorded in the Insert Editing mode. When the sound is to be recorded, press the AUDIO DUB and PAUSE/STILL buttons simultaneously in the Insert Pause mode. When INSERT REC and PAUSE/STILL buttons are pressed simultaneously again, the unit re-enters the Video-signal-only Recording mode.

4 AUDIO DUBBING

Audio dubbing means recording a new soundtrack on a pre-recorded tape, i.e., replacing the original sound with new audio material.

Precautions

- Tapes with their safety tabs removed cannot be audio dubbed. Reseal the safety tab slot to perform the dubbing.
- If whistling or howling is heard during audio dubbing, reduce the TV volume of move the mike farther away from the TV.
- When dubbing from a microphone, connect the microphone to the VideoMovie.

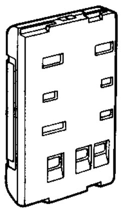


1. Locate the desired edit-out point on the VideoMovie's tape and press PAUSE/STILL.
2. Press COUNTER RESET on the VideoMovie to obtain a "0000" reading, then press COUNTER MEMORY on the VideoMovie to obtain an "M" indication in the viewfinder.
3. Press REW to locate more quickly the place on the tape you want audio dubbing to begin.
4. Press PAUSE/STILL at the exact beginning point for audio dubbing.
5. While pressing AUDIO DUB, press PAUSE/STILL to enter the Audio Dub Standby mode.
6. When you are ready, press PLAY to begin audio dubbing.
7. When the counter reading of "0000" is reached, audio dubbing stops automatically and the VideoMovie enters the Playback mode.

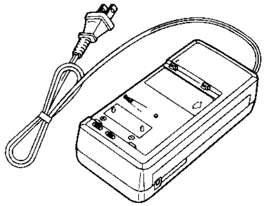
SYSTEMS FLEXIBILITY

For maximum enjoyment, make the most of the provided or optional accessories depending on the situation.

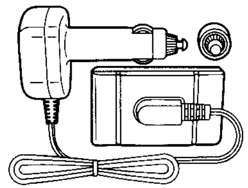
- **High-capacity battery pack BN-V14U**
- **Super-high-capacity battery pack BN-V22U**



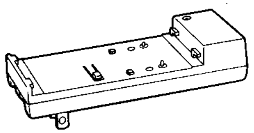
- **AC power adapter/battery charger AA-V3U**
  Use to power the GR-AX7U with household AC current or charge the battery pack.



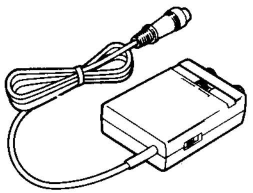
- **Car battery cord AP-V6U**
  Use to power the GR-AX7U using a car battery.



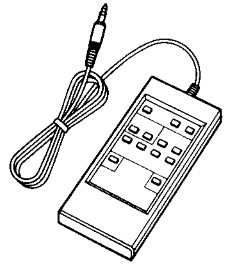
- **Battery charger BH-VC10U**
  Use to charge the battery pack.



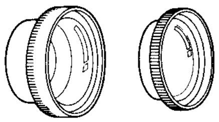
- **RF unit RF-V3U**
  Page 22
  Use to connect the GR-AX7U to a regular television for playback.



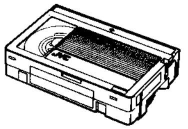
- **Remote control unit RM-V15U**
  Page 27
  Controls VideoMovie's VCR functions from a distance.



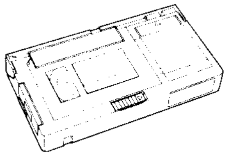
- **Conversion lens kit GL-V6U**
  Consists of telephoto (1.4x) and wide-angle (0.7x) conversion lenses.



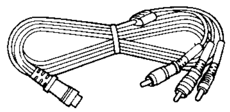
- **VHS-C cassettes TC-30/20**
  Allows 30/20 minutes of or VHS recording and playback respectively.



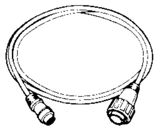
- **Cassette adapter C-P6U**
Enables the VHS-C cassette to be used with regular VHS machines.



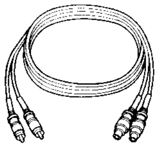
- **A/V output cable VC-V826U**
Use to connect GR-AX7U to a television equipped with audio/video input connectors for playback, or to a VCR for dubbing or editing.



- **Conversion cable VC-V810U**
For connecting the GR-AX7U to a VCR equipped with a 10-pin camera connector.



- **A/V extension cable VC-P1U**
For connecting the GR-AX7U to a video equipment over a distance.



SUPPLEMENTAL INFORMATION

What is "color temperature"?

Light is composed of various color components in different proportions. A relationship exists between the temperature of a light source and the color components of the emitted light; as the temperature rises, the color of the light varies from red, orange, yellow, white to blue in that order. "Color temperature" is a value that expresses differences in color among light sources, measured in Kelvin degrees. Bluish light has a higher color temperature than reddish light.

What is "white balance"?

Making the colors look natural on TV is what white balance is all about. Because a camera is not as adaptable as the human eye, if a light source is reddish, white subjects in that light are recorded as reddish. White balance adjustment is performed to compensate for color temperature variations of light so that whites are reproduced as white. Correct white balance makes all other colors correct. The GR-AX7U can perform automatic white balance adjustment. However, if illumination is insufficient, white balance adjustment cannot be performed. To obtain correct colors, therefore, sufficient illumination is essential.

What is "illuminance"?

"Illuminance" (also called "luminance") is the intensity or brightness of light, expressed in lux. The GR-AX7U is designed to provide best pictures under the conditions of a 700-lux (67 fc) illuminance, although shooting is possible all the way down to 3 lux (0.3 fc). To obtain good pictures in very bright light, the use of an ND (neutral density) filter is recommended. (See chart on the right.)

How to get good color pictures.

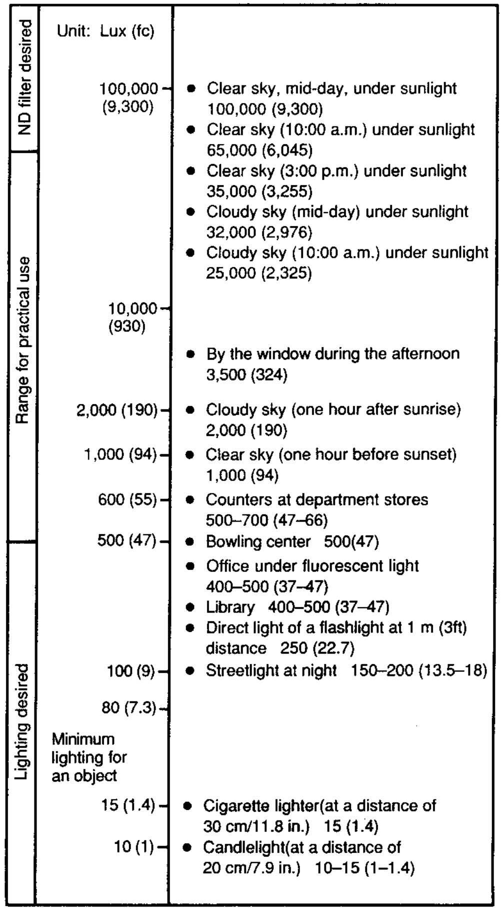
The simplest way is to provide sufficient lighting (close to the camera's reference illuminance) and accurately adjust the camera to the color temperature of that lighting. If light sources of different color temperatures are used together, accurate white balance adjustment is very difficult. For example, if natural light is mixed with artificial light, which is likely to occur next to windows, correct colors of the subject are difficult to obtain. It is recommended in such cases that curtains in the room be closed to shut out light from outside. Also, when artificial lighting devices are used, they should all have the same color temperature. For example, it is recommended that incandescent or halogen lamps not be used together with fluorescent lighting.

Color temperatures of various artificial lighting

Type of illumination		Color temperature
Tungsten lamp for home use		2800 K
Tungsten lamp for photographic use		3200 K
Quartz-halogen lamp		
Blue lamp for photographic use		5000 K
Fluorescent lamp	Warm white	3500 K
	White	4500 K
	Daylight type	6500 K

Illumiance chart

- The values on this chart are approximated to give you a rough reference.



- Clear sky, mid-day, under sunlight 100,000 (9,300)
- Clear sky (10:00 a.m.) under sunlight 65,000 (6,045)
- Clear sky (3:00 p.m.) under sunlight 35,000 (3,255)
- Cloudy sky (mid-day) under sunlight 32,000 (2,976)
- Cloudy sky (10:00 a.m.) under sunlight 25,000 (2,325)
- By the window during the afternoon 3,500 (324)
- Cloudy sky (one hour after sunrise) 2,000 (190)
- Clear sky (one hour before sunset) 1,000 (94)
- Counters at department stores 500–700 (47–66)
- Bowling center 500(47)
- Office under fluorescent light 400–500 (37–47)
- Library 400–500 (37–47)
- Direct light of a flashlight at 1 m (3ft) distance 250 (22.7)
- Streetlight at night 150–200 (13.5–18)
- Cigarette lighter(at a distance of 30 cm/11.8 in.) 15 (1.4)
- Candlelight(at a distance of 20 cm/7.9 in.) 10–15 (1–1.4)

CAUTIONS

For safety, strictly observe the following instructions.

- Do not open the cabinet.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not disassemble or modify the unit.
- Do not use the unit when there is lightning in the vicinity. Disconnect the power cable of connected equipment.

Avoid using the unit under the following conditions:

- Places subject to excessive humidity or dust.
- Near appliances generating strong magnetic or electric fields (speakers, broadcasting antennas, etc.).
- Places subject to soot or steam such as near a cooking stove.
- Places subject to excessive shock or vibration.
- Near a television set (rolling pictures or howling might result).
- Extremely hot places.

Do not expose the unit to high temperatures over 40°C (104°F) for long periods.

If the unit should be subjected to direct sunlight, or left in a closed car in summer, or placed near a heater, the CCD and the auto-focus sensor may deteriorate and the cabinet may become deformed. Furthermore, this also may cause the transistors and other electronic and mechanical parts to malfunction. Remember the following:

- Do not leave the unit in places of over 50°C (122°F).
- Do not use the unit in places of over 40°C (104°F).
- Do not use the unit in places of below 0°C (32°F).
- Protect the unit from excessively dry or humid conditions (below 35% or above 80% humidity).
- For long storage, select a place between –20°C (–4°F) and 30°C (86°F).

Take special care for protection of the unit.

- Do not allow the unit to become wet.
- Do not leave the unit in closed cars on hot summer days.
- Take special care not to drop the unit or strike it against hard objects. Protect from shocks during transportation.

Make it a rule to observe the following instructions.

- Do not remove the battery pack or disconnect other power supply units during recording or playback before pressing the POWER switch to OFF. If not observed, this will cause tape damage.
- When the unit is not in use, remove the battery pack.

Keep the lens and viewfinder eyepiece always clean.

- When the lens if dirty or dusty, blow it off first and then gently wipe with a soft brush or lens cleaning paper.
- The lens is likely to become moldy if left dirty.

Be careful not to damage the CCD.

- Do not keep the lens directed at extremely bright objects such as the sun or other light sources for long periods. Although the CCD is less susceptible to such burn than a tube would be, caution should be exercised when using this unit. Most importantly, the lens should be capped except while actually shooting.
- Do not direct the eyepiece of the viewfinder at the sun.

Handle the unit carefully.

- Protect the microphone from excessive shocks.
- Do not carry the unit by holding it only by the viewfinder.

Moisture condensation prevents use of the unit.

- You have observed that pouring a cold liquid into a glass will cause drops of water to form on the glass's outer surface. This same phenomenon occurs on the head drum of a VideoMovie when it is moved from a cool place to a warm place, after heating a cold room, under extremely humid conditions or in a place directly subjected to the cool air from an air conditioner.
- Moisture on the head drum can cause severe damage to the video tape, and can lead to internal damage to the VideoMovie itself.
- If moisture condensation occurs on the head drum, a condensation warning appears above the counter display and the unit enters the Stop mode, unable to function. In such a case, wait for a few hours until the indicator disappears.

Maintenance

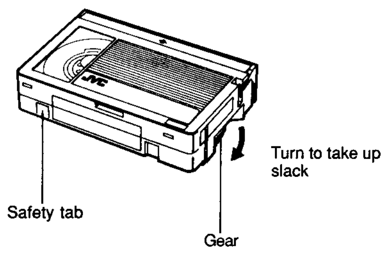
- When the cabinet is dusty, clean by gently wiping with a soft cloth.
- Avoid the use of strong cleaning agents such as benzine or alcohol as they may damage the cabinet.
- Cleaning should be done only after the battery pack has been removed or other power units have been disconnected.

Serious malfunctioning

If malfunctioning occurs, stop using the unit immediately and consult your local JVC dealer.

VIDEO CASSETTES

- The GR-AX7U employs only the cassettes carrying the VHS-C mark.
- Recording onto prerecorded tapes automatically erases the previously recorded video and audio signals.
- An inverted cassette cannot be inserted.
- Do not load and unload the cassette repeatedly without allowing the tape to run at all. This will slacken the tape and thereby damage it.
- Make certain before loading the cassette that the tape is not slack. If there is any slack, turn the gear on the cassette in the direction of the arrow to take up slack.
- The cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording is impossible. If you wish to record on a cassette whose tab has been removed, use adhesive tape to reseal the slot.
- To avoid excessive exposure to dust and fingerprints, do not open the front tape cover.



Storage of cassettes

- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid storing the cassettes in humid or dusty places.
- Do not drop the cassettes. Do not expose them to violent vibrations or shocks.
- Do not expose the cassettes to strong magnetic fields (near a motor, transformer or magnet).
- Place the cassettes in cassette cases and position them vertically.

IN CASE OF DIFFICULTY

What may initially appear to be trouble is not always a real problem. Make sure first...

Symptoms	Check points
Power	
No power is supplied.	• Is the battery pack correctly installed? • Is the battery pack charged? • Is the power supply unit correctly connected?
Recording	
Recording is impossible.	• Check to see if the cassette safety tab in place. See page 35.
No sound is recorded with an external microphone.	• Is the microphone's switch set to ON?
Recording does not start.	• Have you slidden the control panel to CAMERA first?
Playback	
Tape is running, but no playback picture appears.	• Is the VIDEO/TV switch of the RF unit set to VIDEO? • Is the TV receiver set to your video channel? • If A/V connection is used, is the TV's VIDEO/TV switch set to VIDEO?
Noise bars appear in the playback picture.	• Use the manual TRACKING buttons to reduce noise bars.
Playback picture is blurred or interrupted.	• Video heads may be dirty or worn out. For head cleaning or replacement, consult the nearest JVC Service Dealer.
Tape transport	
Tape stops during fast forward or rewind.	• Is the "M" indication visible in the viewfinder? If so, press the MEMORY button to cancel the memory function.
Rewinding or fast forwarding is impossible.	• Check to see if the tape has already been fully wound on one reel or the other.
Other	
No function is available with more than two mode indicators lit.	• If this should happen when using power supply units other than the battery pack, turn their POWER switch on and off. With a battery pack, replace it with another charged one.
Vertical white lines appear when shooting a very bright object.	• This may occur when the background contrasts very much with the object. This is normal.
Picture is blurred in the Quick Review or Retake mode.	• Is the SP/EP recording mode select switch properly set?

Note on removing a power supply unit
Do not remove the power supply unit during recording or playback. This will cause damage to the tape.
If the power supply unit is removed during recording and reattached later, the Record-Pause mode may not be re-engaged. If no picture is displayed on the viewfinder screen even if the power switch is turned on, turn it off once, then turn it on again.

The GR-AX7U is a microcomputer-controlled device. External noise and interference might prevent it from functioning properly. In such cases, first disconnect its power supply unit (battery pack, AC power adapter, etc.); and then reconnect it and proceed as usual from the beginning.

SPECIFICATIONS

Format	: VHS NTSC standard
Power source	: DC 6 V ⎓
Power consumption	: 8 W (Avg.), 1.6 A (Max.)
Signal system	: NTSC-type
Video recording system	: Luminance: FM recording Color: Converted sub-carrier direct recording Conforms to VHS standard
Cassette	: VHS C cassette
Tape speed (SP)	: 33.35 mm/sec (1-5/16 ips)
(EP)	: 11.12 mm/sec (7/16 ips)
Recording time	
Max. (SP)	: 30 minutes (with TC-30 cassette)
(EP)	: 90 minutes (with TC-30 cassette)
VIDEO	
Output	: 1 Vp-p, 75 ohms, unbalanced (via AV OUT connector)
S/N ratio	: More than 40 dB (with Rohde & Schwarz noise meter)
AUDIO	
Output	: –6 dBs, 1 k-ohm (via AV OUT connector).
Microphone input	: –68 dBs, high impedance, unbalanced
Pick up	: 1/3"-format CCD
Minimum required illumination	: 3 lux (0.3 fc) (at F/1.4)
Illumination range	: 3 to 100,000 lux (0.3 to 9,300 fc)
Lens	: F/1.4, f = 7 to 42 mm, 6:1 power zoom lens with auto iris and macro control, filter diameter 46 mm (with step-up ring)
Viewfinder	: Electronic viewfinder with 0.6" black/white CRT
Selectable high-speed shutter	: Switchable (1/60, 1/100, 1/250, 1/500, 1/1000, 1/4000 second)
White balance adjustment	: Full-auto
Operating temperature	: 0°C to +40°C (32°F to 104°F)
Operating humidity	: 35% to 80%
Storage temperature	: –20°C to +50°C (–4°F to 122°F)
Weight	: 760g (1.7 lbs) (without Lens cap, Pad, Finger rest)
Dimensions	: 162(W) x 116(H) x 106(D) mm (6-7/16" x 4-5/8" x 4-3/16") (incl. viewfinder)

AA-V3U SPECIFICATIONS

Power requirement	: U.S. and Canada: AC 120 V∿, 60 Hz Other countries: AC 110 to 240 V∿, 50/60 Hz
Power consumption	: 22 W
Output	: DC 8.5 V⎓, 1.3 A (Charge), DC 6 V⎓, 1.8 A (VideoMovie)
Charging system	: Constant current, peak detection, timer controlled
Dimensions	: 145(W) x 42(H) x 69(D) mm (5-3/4" x 1-11/16" x 2-3/4")
Weight	: Approx. 360 g (0.8 lbs)

C-P6U SPECIFICATIONS

Type	: VHS cassette adapter
Dimensions	: 188(W) x 25(H) x 104(D) mm (7-7/16" x 1" x 4-1/8")
Weight	: 240 g (0.53 lbs)
Accessory	: "AA"-size battery x 1

PROVIDED ACCESSORIES

AC power adapter/battery charger	AA-V3U
Battery pack	BN-V14U
A/V output cable	VC-V826U
Cassette adapter	C-P6U
Battery for clock operation	CR2025
Shoulder strap	
Step-up ring	

For optional accessories, see pages 31 and 32.

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

SECTION 1
SERVICE CAUTIONS & DISASSEMBLY

1.1 PRECAUTIONS

1. Before disassembling/re-assembling the set as well as soldering parts, make sure to disconnect the power cable.
2. When disconnecting/connecting connectors, pay enough attention to wiring not to damage it.
3. In general, chip parts such as resistors, shorting jumpers (0-ohm resistor), ceramic capacitors, diodes, etc. can not be reused after they were once removed. (Refer to Section 1.3.)
4. When installing parts, be careful not to do with other parts as well as not to damage others. (Pay the most careful attention to the upper drum ass'y and tape transport mechanism.)
5. When removing ICs, be careful not to damage circuit patterns.

1.2 REQUIRED TEST EQUIPMENT, FIXTURES/TOOLS AND OTHERS

For proper measurement and adjustment, make sure to use the following test equipment, fixtures/tools besides general tools.

1.2.1 Test equipment, etc.

1. Color TV monitor
2. AC power adapter (AA-V3U, AA-V6U or equivalent)
3. Oscilloscope (dual-trace type, for more than 20 MHz)
4. Frequency counter
5. Audio level meter and audio signal generator
6. Video signal generator
7. Sweep generator
8. Vectorscope

- **Color bar signal**

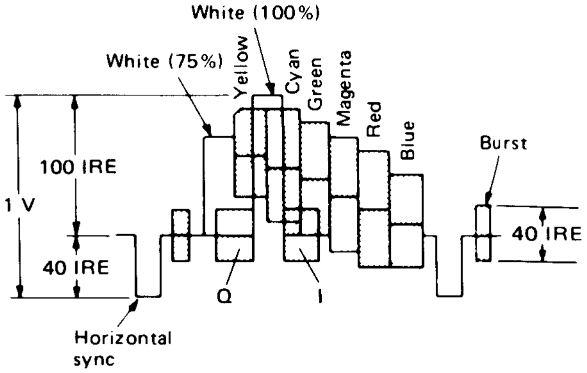

White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst
100 IRE
1 V
40 IRE
40 IRE
Q
I
Horizontal sync

Fig. 1-2-1 Color bar signal waveform

- **Color bar pattern**

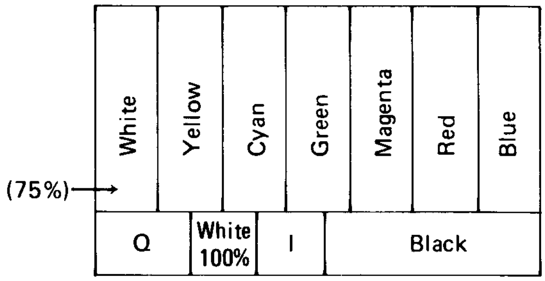

White
Yellow
Cyan
Green
Magenta
Red
Blue
(75%)
Q
White 100%
I
Black

Fig. 1-2-2 Color bar pattern

- **Color sweep signal**

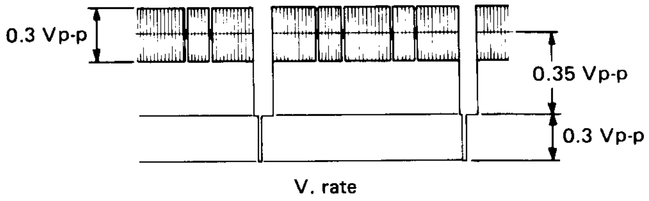

0.3 Vp-p
0.35 Vp-p
0.3 Vp-p
V. rate

Fig. 1-2-3 Color sweep signal

1.2.2 Special test equipment and tools required for adjustment

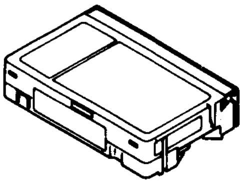
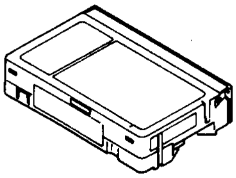
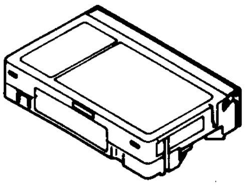
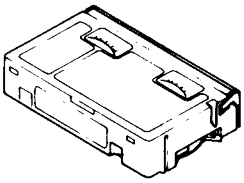
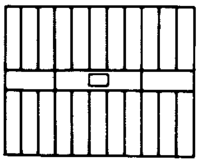
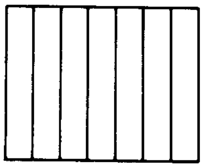
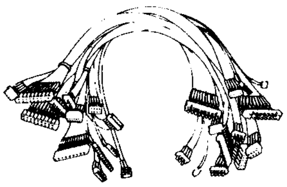
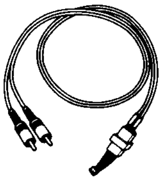
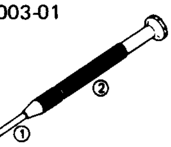
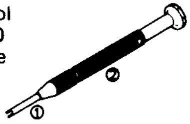
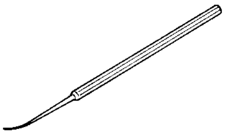
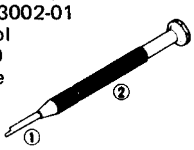
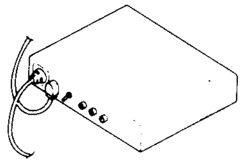
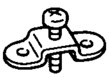
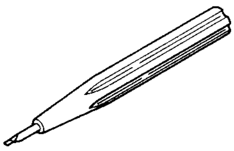
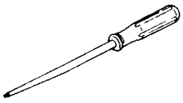
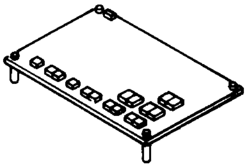
Test tape for SP interchangeability (MHP-C or MH-C1)	Test tape for EP interchangeability (MHP-LC)	Test tape for N. SP PB Y/C level (MHV-2C or MH-C1)	Cassette torque meter PUJ50431-2
			
Gray scale pattern (GS-2A) Reflection type, 11 steps, $\gamma = 2.2$	Color bar pattern (CC-2A) Reflection type, 7 colors	Patch cord set YTU93040A	Y/C separator cable YTU93006
			
Chip parts replacing tool YTU93003A (incl. 1 & 2)	Chip parts replacing tool YTU93003B (incl. ① & ②)	Chip IC replacing tool PTS40844-2	A/C head positioning tool YTU93002A (incl. ① & ②)
① YTU93003-01 Bit tool ② PD-3.0 Handle  Orders for ① & ② can be placed separately.	① YTU93003-02 Bit tool ② PD-3.0 Handle  Orders for ① & ② can be placed separately.		① YTU93002-01 Bit tool ② PD-3.0 Handle  Orders for ① & ② can be placed separately.
Y/C separator PUJ25579	Upper drum removal tool YTU94031A	Ultramini VR adjusting driver YTU93036	0.35 mm adjusting driver YTU94028
			
E. VR adjuster YTU93041A			
			

Table 1-2-1

1.2.3 Main screws to deal with disassembly/assembly

Table 1-2-2 lists screws by their symbols which correspond to those shown in figures of this section "Service Cautions & Disassembly".

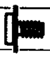
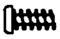
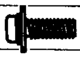
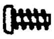
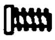
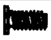
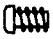
Symbol of Screw	Shape	Parts Number	Symbol of Screw	Shape	Parts Number	Symbol of Screw	Shape	Parts Number
Ⓐ		YQM30052-1	Ⓕ		SPSP2004Z	Ⓚ		YQ40691
Ⓑ		YQM30052-3	Ⓖ		DPSP2008Z	Ⓛ		SPSH1735M
Ⓒ		YQM30052-2	Ⓗ		SPSK2004F	Ⓜ		SPSN2050D
Ⓓ		YQM30032-3-2	Ⓘ		YU30398-002			
Ⓔ		SPSF2005Z	Ⓙ		SPSH1725N			

Table 1-2-2

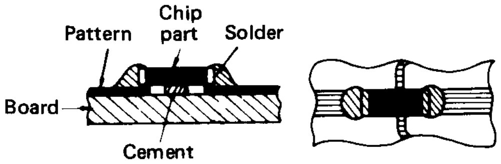
1.3 REPLACEMENT OF CHIP PARTS

For replacing chip parts, proceed as follows.
Use a well-insulated fine-tipped soldering iron (approx. 17 W, 130°C ~ 260°C in temperature).
In addition, it is recommended to use a soldering iron with solder absorber (55 W approx.) for convenience.

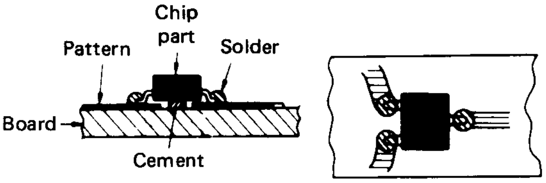
Caution:
- *Do not apply heat for more than 3 seconds.*
- *Do not rub electrodes.*
- *Do not reuse chip parts which were removed once.*
- *Supplementary cementing is not required.*

1.3.1 Soldered condition of chip parts

- Resistors, capacitors, etc.



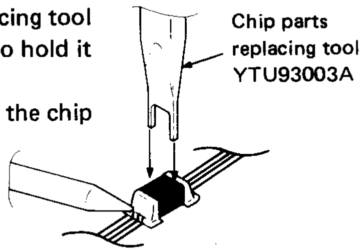
- Transistors, diodes, etc.



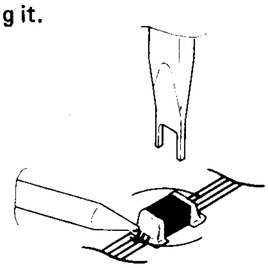
1.3.2 How to remove chip parts

- Resistors, capacitors, etc.

1. Set a chip parts replacing tool onto the chip parts to hold it down.
2. Unsolder at a side of the chip parts.

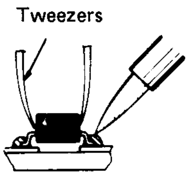


3. Remove the chip part by twisting and sliding it.

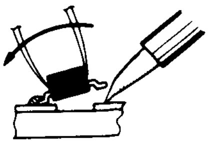


- Transistors, diodes, etc.

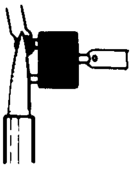
1. Unsolder at the one-lead side of the chip parts.



2. Lift the unsoldered side upward.



3. Heat the other two leads simultaneously and remove the chip parts upward.

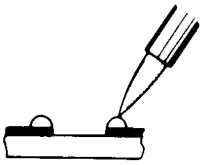


1.3.3 Preheating and soldering chip parts

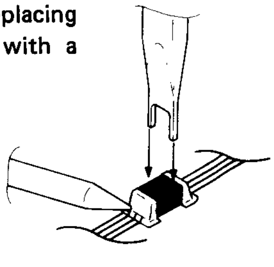
Just before soldering new chip parts except transistors, but capacitors including, preheat them with hot air (150°C approx.) by use of a blower type of hair dryer for about 2 minutes. Immediately after that, solder it with a soldering iron of 30 W approx.

1.3.4 How to set and solder chip parts

1. Presolder the contact points of the circuit pattern to which the chip parts will be soldered.



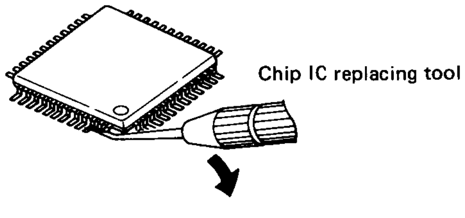
2. Hold down the chip parts with the chip parts replacing tool, then, solder it with a soldering iron.



1.4 REMOVING OF FLAT ICs

(Recommended method)

1. For removing solder chips from IC's pins, use a solder remover or a braided solder absorber.
2. Heat the IC's tips evenly by moving the chip IC replacing tool around them, and carefully separate the IC's leads with the tool as illustrated.
3. Do not reuse ICs removed once. (Discard them.)



1.5 DISASSEMBLY OF CAMERA SECTION

Note: *Three kinds of double-arrows in connection tables respectively show kinds of connectors/wires.*

⬌ : Board-to-Board connector
⇔ : Flat wire
↔ : Wire

1.5.1 Operation unit

1. Remove four screws Ⓐ, and lift the operation unit in the direction of the arrow to remove it after disconnecting the connector ①.

Con-nector	No.of pins	Connection
①	12	OPERATION(DECK) CN1 ⬌ 01 VTR CN5

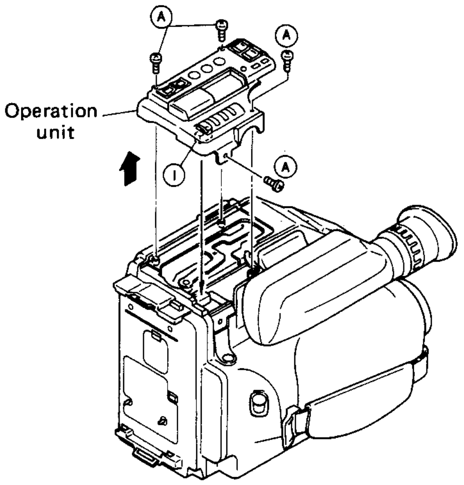


Fig. 1-5-1 Operation unit

1.5.2 Electronic viewfinder

1. Remove two screws Ⓑ and disconnect the connector ①.

Con-nector	No.of pins	Connection
①	5	Electronic viewfinder ↔ 01 VTR CN12

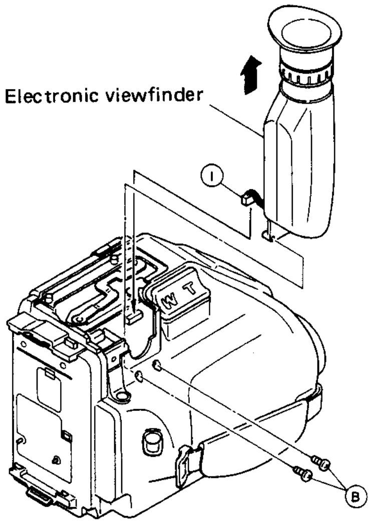


Fig. 1-5-2 Electronic viewfinder

1.5.3 Front panel assembly

1. Remove four screws Ⓒ.
2. Slide the hood assembly in the direction of the arrow ⓐ and remove it in the direction of the arrow ⓑ.
3. Move the front panel assembly in the direction of the arrow ⓒ and disconnect the connectors ① and ②.

Con-nector	No.of pins	Connection
①	2	16 TALLY CN1 ↔ 17 JUNCTION CN1
②	2	Microphone unit ↔ 02 JACK CN3

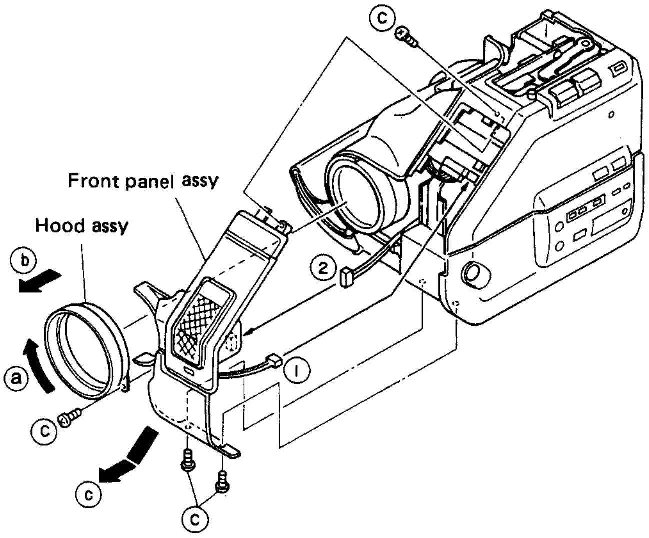


Fig. 1-5-3 Front panel assembly

4. Remove a screw Ⓑ and the white balance sensor and detach the front panel assembly completely.
To detach the microphone unit, release it from locking by three pawls and move it in the direction of the arrow.

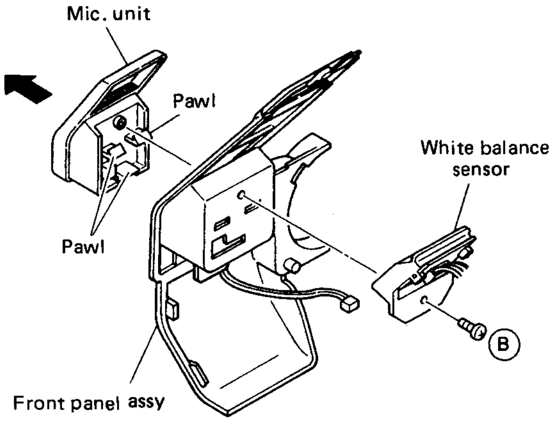


Fig. 1-5-4 White balance sensor & microphone unit

1.5.4 Cassette cover assembly

1. Remove two screws Ⓓ and slide it in the direction of the arrows.
2. Disconnect the connector ① and take off the cassette cover assembly.

Con-nector	No.of pins	Connection
①	7	OPERATION (CAMERA) ⇔ 17 JUNCTION CN3

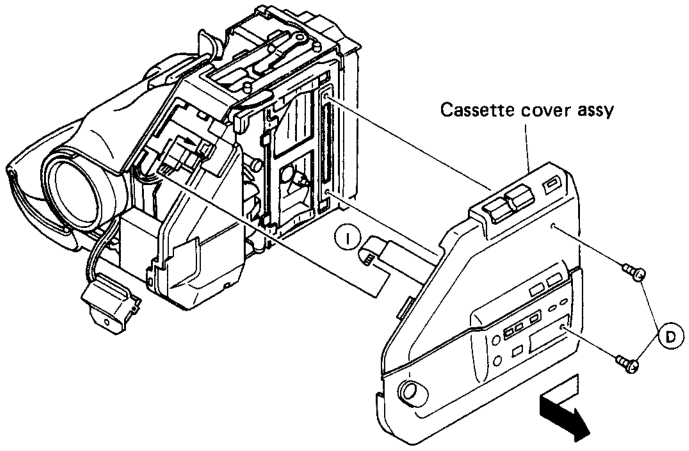


Fig. 1-5-5 Cassette cover assembly

1.5.5 Upper cover assembly

1. Remove two screws Ⓒ and disconnect the connector ①.

Con-nector	No.of pins	Connection
①	9	17 JUNCTION CN2 ↔ 11 CAM CPU CN16, 15 AF CN59

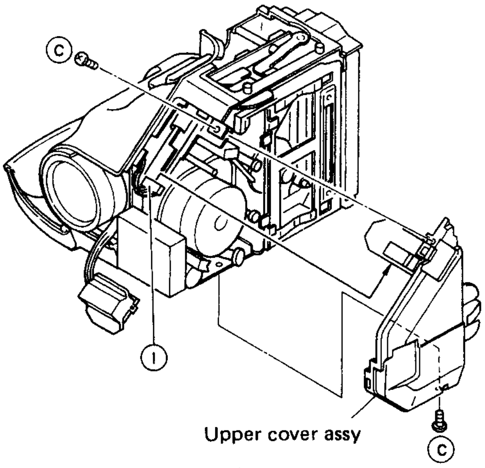


Fig. 1-5-6 Upper cover assembly

1.5.6 Rear cover assembly

1. Remove four screws Ⓒ and disconnect the connector ①.

Con-nector	No.of pins	Connection
①	8	18 DISPLAY CN1 ↔ 01 VTR CN1, 11 CPU CN16

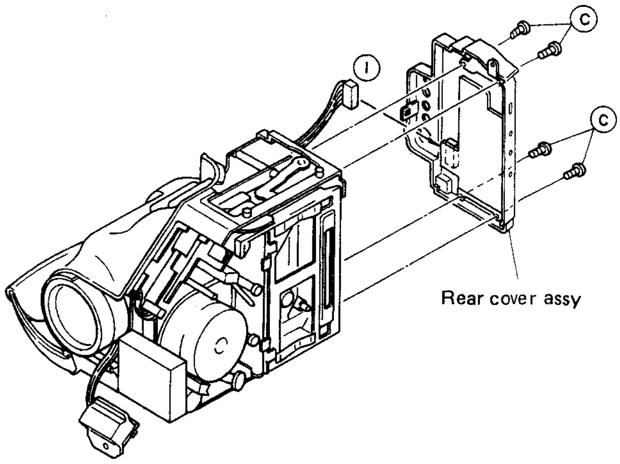


Fig. 1-5-7 Rear cover assembly

1.5.7 Lower case assembly

1. Remove two screws Ⓒ , a screw Ⓜ and two screws Ⓔ . Then, move the main body unit in the direction of the arrow and disconnect the connectors ① and ②.

Con-nector	No.of pins	Connection
①	3	15 AF CN55 ↔ ZOOM switch
②	3	01 RTR CN17 ↔ 05 TRIGGER CN1

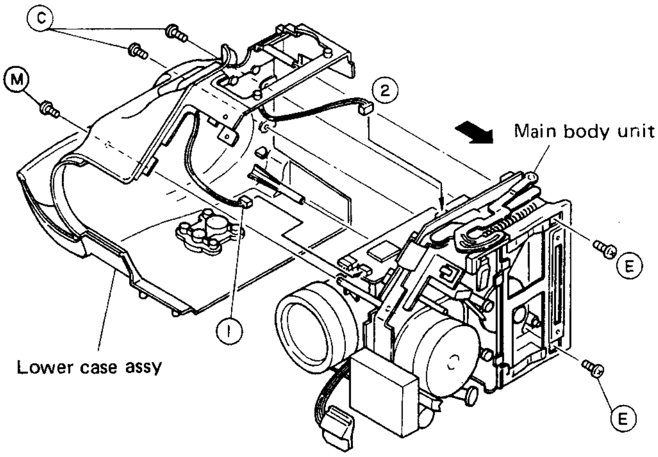


Fig. 1-5-8 Lower case assembly

1.5.8 Camera section

1. Remove a screw Ⓔ.
2. Move the camera section in the direction of the arrow, and disconnect the connectors ① and ②.
3. Disconnect the connectors ③, ④ and ⑤.

Con-nector	No.of pins	Connection
①	16	01 VTR CN14 ⬌ 11 CPU CN11
②	10	01 VTR CN15 ⬌ 12 VIDEO CN21
③	9	11 CPU CN16 ↔ 17 JUNCTION CN2 18 DISPLAY CN1
④	4	15 AF CN59 ↔ 17 JUNCTION CN2
⑤	7	11 CPU CN15 ↔ Auto white sensor

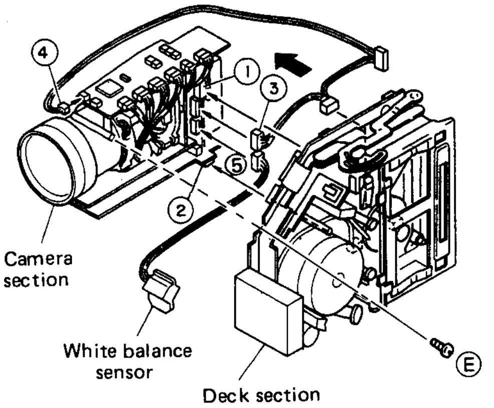

④
①
③
⑤
②
Camera section
White balance sensor
Deck section
Ⓔ

Fig. 1-5-9 Camera section

1.5.9 Hookup for inspection and adjustment of camera section

After detaching the camera section and deck section from each other, connect the following patch cords as shown in Fig. 1-5-10 for the purpose of inspection and adjustment of the camera section.

Con-nector	No.of pins	PART No.	Connection
①	8	PPU58655A-8	18 DISPLAY CN1 ↔ 01 VTR CN1
②	9	PPU58655A-8	17 JUNCTION CN2 ↔ 11 CPU CN16
③	12	YUJ41361B-12	OPERATION (DECK) CN1 ⬌ 01 VTR CN5
④	10	YUJ41361B-10	12 VIDEO CN21 ⬌ 01 VTR CN15
⑤	7	YUJ40095A-7	11 CPU CN15 ↔ Auto white sensor
⑥	16	YUJ41358B-16T	11 COP CN11 ⬌ 01 VTR CN14 EVR ADJUSTER

Note: *For auto focus adjustment, refer to the connection shown in Fig. 3-4-1 (Section 3.4).*

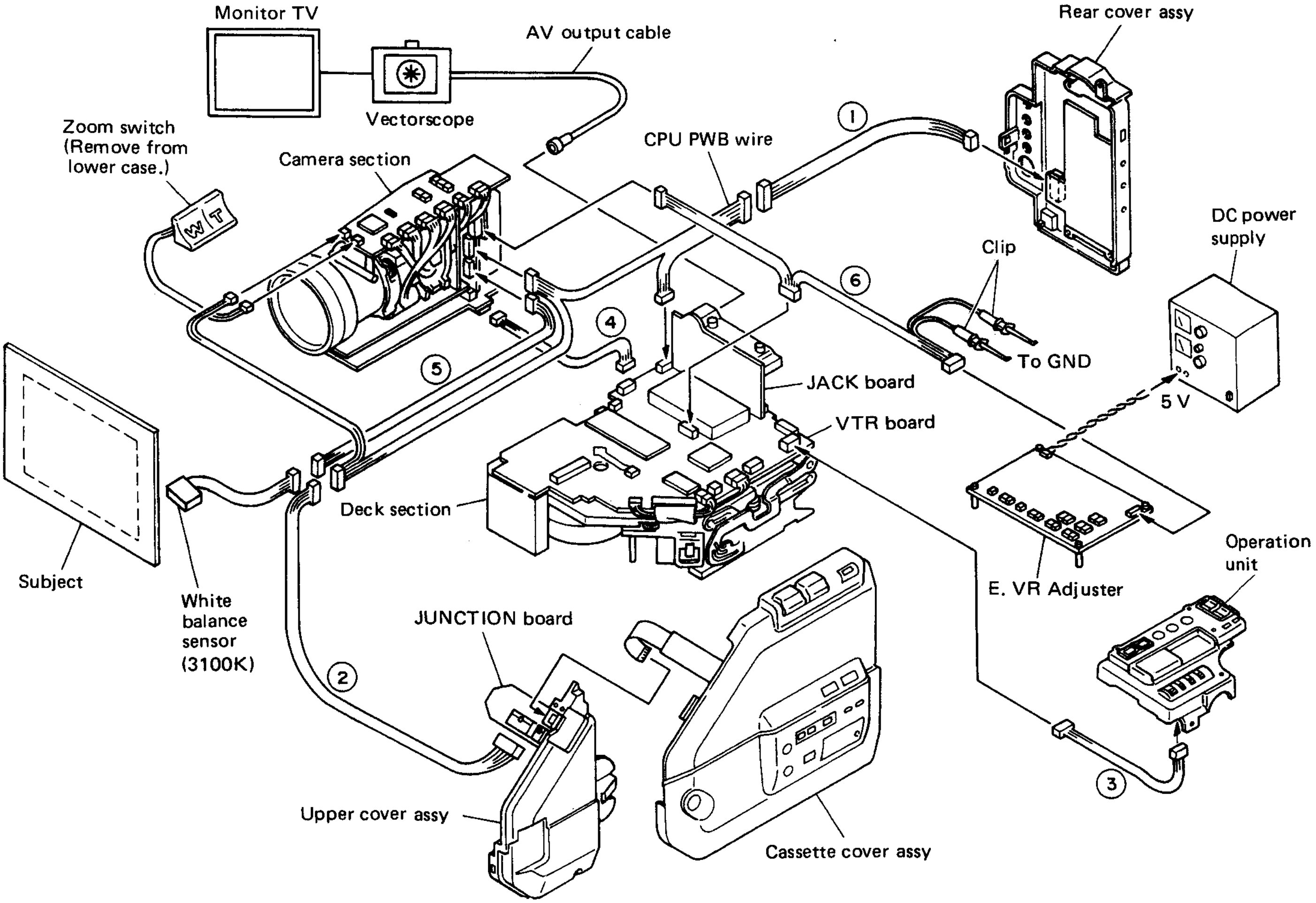

Monitor TV
AV output cable
Vectorscope
Rear cover assy
Zoom switch (Remove from lower case.)
Camera section
CPU PWB wire
①
DC power supply
Clip
⑥
④
⑤
To GND
JACK board
5V
VTR board
Deck section
Subject
White balance sensor (3100K)
JUNCTION board
②
E. VR Adjuster
Operation unit
③
Upper cover assy
Cassette cover assy

Fig. 1-5-10 Setup for inspection and adjustment of camera section

For replacement of the CCD image sensor and the OP block as the next step of the adjustment procedure, remove the following boards.

Note: *Since the structure of all boards of the camera section is the board-to-board connector (1 mm pitch), carefully remove each board not to damage it.*

1.5.10 VIDEO board

1. Move the VIDEO board in the direction of the arrow and disconnect the connectors ①, ② and ③.

Connector	No.of pins	Connection
①	8	$\boxed{1}\boxed{2}$ VIDEO CN23 ↔ DC-DC converter
②	30	$\boxed{1}\boxed{2}$ VIDEO CN22 ↔ $\boxed{1}\boxed{1}$ CPU CN12
③	30	$\boxed{1}\boxed{2}$ VIDEO CN24 ↔ $\boxed{1}\boxed{3}$ SSG CN32

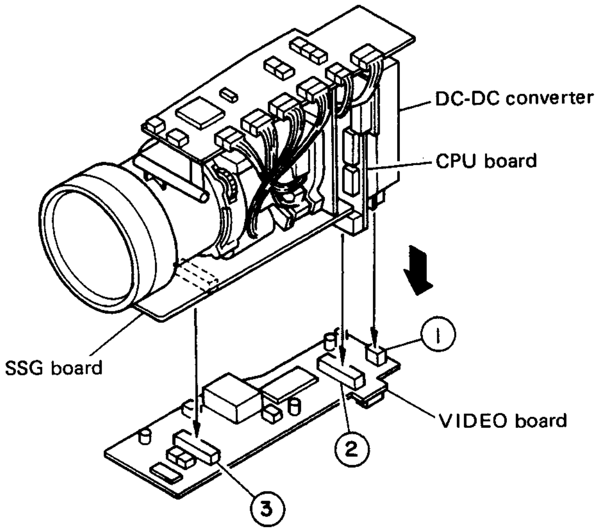


Fig. 1-5-11 VIDEO board

1.5.11 DC-DC converter

1. Move the DC-DC converter in the direction of the arrow and disconnect the connector ①.

Connector	No.of pins	Connection
①	6	DC-DC converter ↔ $\boxed{1}\boxed{5}$ AF CN52

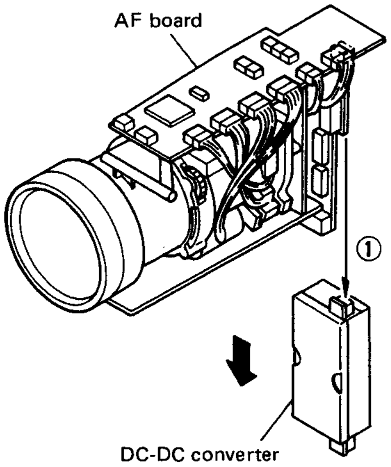


Fig. 1-5-12 DC-DC converter

1.5.12 SSG board

1. Remove a screw Ⓔ.
2. Move the CPU board in the direction of the arrow ⓐ, and disconnect the connector ①.
3. Move the SSG board in the direction of the arrow ⓑ, and disconnect the connector ②.

Connector	No.of pins	Connection
①	14	$\boxed{1}\boxed{3}$ SSG CN31 ↔ $\boxed{1}\boxed{1}$ CPU CN13
②	16	$\boxed{1}\boxed{3}$ SSG CN33 ↔ $\boxed{1}\boxed{4}$ CCD CN41

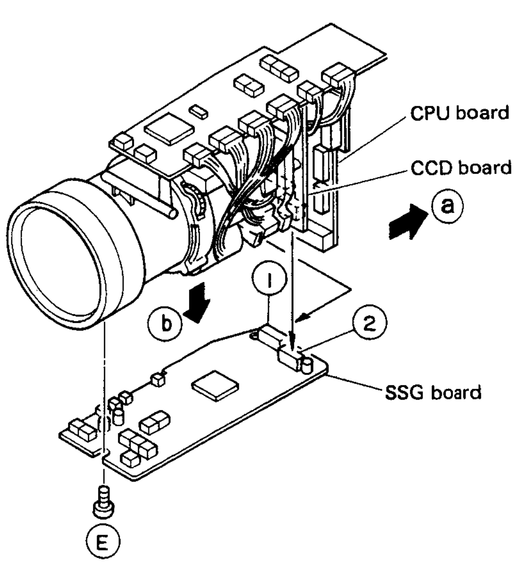


Fig. 1-5-13 SSG board

1.5.13 AF board

1. Remove two screws Ⓔ.
2. Disconnect the connectors ① to ⑥.

Connector	No.of pins	Connection
①	3(W)	$\boxed{1}\boxed{5}$ AF CN57 ↔ Zoom encoder
②	4(Y)	$\boxed{1}\boxed{5}$ AF CN58 ↔ Infinite sensor
③	4(W)	$\boxed{1}\boxed{5}$ AF CN60 ↔ Iris motor
④	4(R)	$\boxed{1}\boxed{5}$ AF CN53 ↔ Hall element
⑤	2(W)	$\boxed{1}\boxed{5}$ AF CN56 ↔ Zoom motor
⑥	4(B)	$\boxed{1}\boxed{5}$ AF CN54 ↔ AF motor

W : White Y : Yellow R : Red B : Black

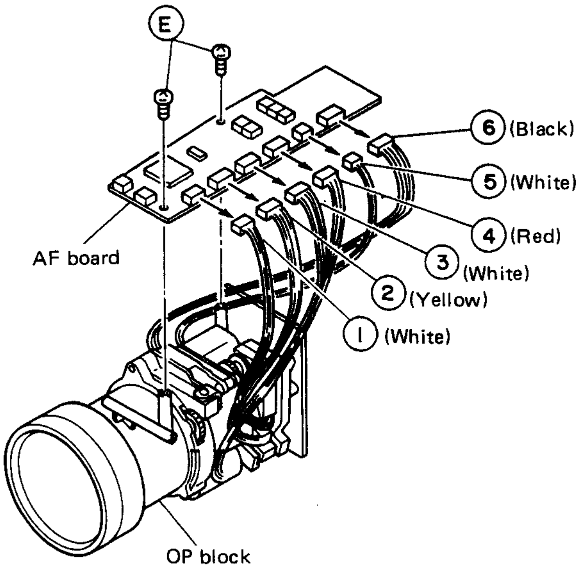


Fig. 1-5-14 AF board

1.5.14 CCD board

1. Remove two screws Ⓕ.
2. Move the CCD board in the direction of the arrow. At that time, pay careful attention to pins of the CCD image sensor not to damage them.

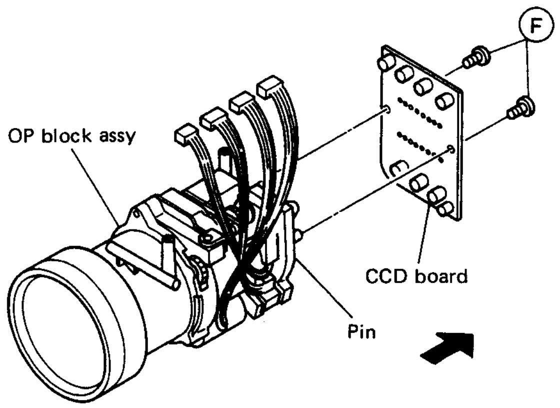


Fig. 1-5-15 CCD board

1.5.15 Replacement of CCD image sensor

Note:

- ***Pay the most careful attention to the transparent glass and optical filters of the CCD image sensor not to soil and damage them. If something is soiled with fingerprints, etc., gently clean it with silicone-processed paper/cloth or chamois.***
- ***When the CCD image sensor is shipped from the factory, there are protection seals applied onto the transparent glass. Leave the protector as it is, and take it off just before assembling the CCD image sensor to the OP block.***

- **Removal of CCD image sensor**

1. Remove two screws Ⓖ securing the imager holder.
2. Remove two screws Ⓗ securing the filter holder, and disassemble the optical filter, spacer rubber, and CCD image sensor from the holder.

- **Installation of new CCD image sensor**

1. Remove the protection seal from a new CCD image sensor and set it on the imager holder. Next, put the spacer rubber, optical filter, filter holder on the CCD image sensor as they are piled up in this order. At that time, make sure of orientation of each item referring to the following table (see Fig. 1-5-16).

Parts Name	Orientation
Imager holder	Parts No. is upside-down viewed as indicated by the arrow ⓐ.
CCD image sensor	Mark is on the right viewed as indicated by the arrow ⓐ.
Spacer rubber	IC side is horizontal.
Optical filter	Marking orientates toward downside of OP block.

2. Next, fix the filter holder to the imager holder with the two screws Ⓗ.
3. Fix the imager holder to the OP block with the two screws Ⓖ. At that time, be careful of the orientation.
4. After completion of the CCD image sensor replacement and reassembly of all P.C. boards to the camera section, observe the monitor to confirm no vignetting caused by the bodytube, rings, lens hood, etc. If no vignetting is observed, it can be said that image's parallel, horizontality and centering are correct.
5. After all of the above works, perform the Auto Focus Adjustment described in Section 3.4.

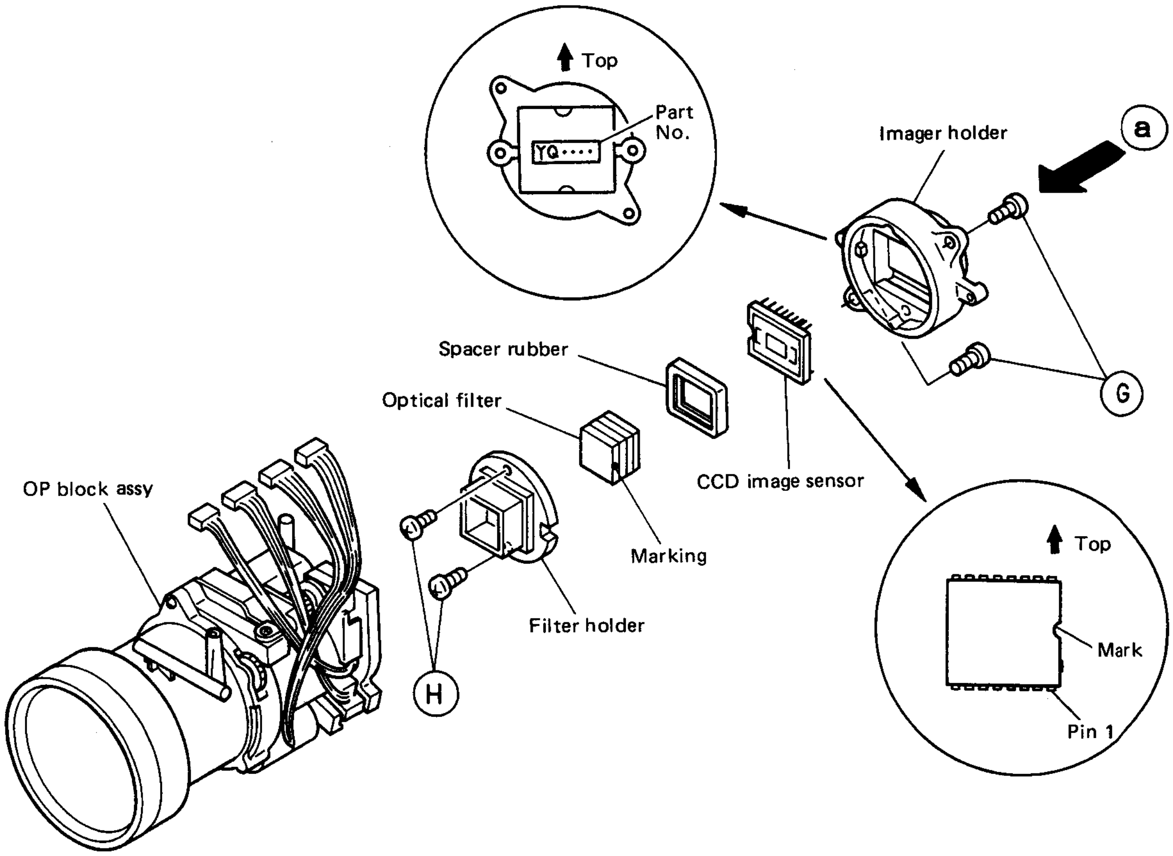

Top
Part No.
YQ····
Imager holder
ⓐ
Ⓖ
Spacer rubber
Optical filter
OP block assy
CCD image sensor
Marking
Filter holder
Ⓗ
Top
Mark
Pin 1

Fig. 1-5-16 CCD image sensor

1.5.16 OP (optical) block assembly

After removal of the imager holder (Section 1.5.15), replace the OP block assembly.

- **Zoom motor assembly**

1. Remove two screws Ⓘ.

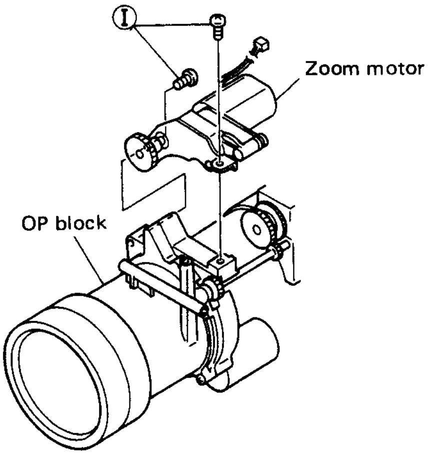

Ⓘ
Zoom motor
OP block

Fig. 1-5-17 Zoom motor assembly

Note:*After the OP block assembly and the zoom motor assembly are replaced, perform the Auto Focus Adjustment of Section 3.4.*

1.5.17 Electronic viewfinder

1. Match the markings and turn the lens assembly in the direction of the arrow ⓐ, then move it in the direction of the arrow ⓑ to detach it.
2. Remove five screws Ⓩ and the O-ring.

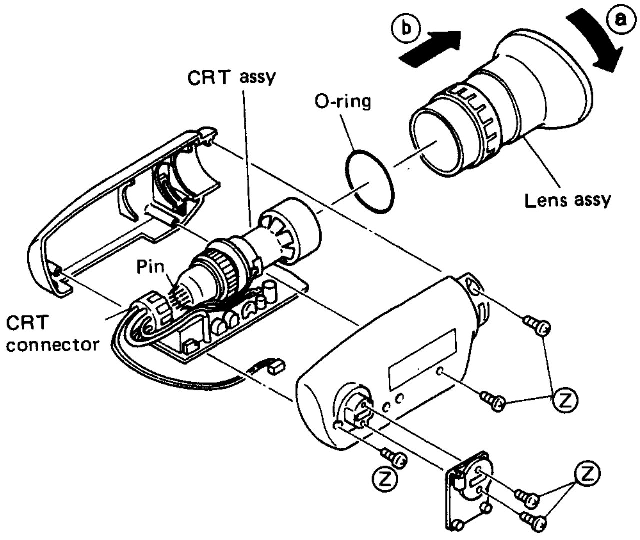

ⓑ
ⓐ
CRT assy
O-ring
Lens assy
Pin
CRT connector
Ⓩ
Ⓩ
Ⓩ

Fig. 1-5-18 Electronic viewfinder

3. For replacing the CRT, securely and carefully connect with the CRT connector not to bend or damage pins of the CRT.

1.6 DISASSEMBLY OF DECK SECTION

Note: *Three kinds of double-arrows in connection tables respectively indicate kinds of connectors/wires.*

- ⬌ : Board-to-Board connector
- ⇔ : Flat wire
- ↔ : Wire

1.6.1 Hookup for inspection and adjustment of deck section

After detaching the camera section and deck section from each other according to Section 1.5.8, connect the following patch cords as shown in Fig. 1-6-1 for the purpose of inspection and adjustment of the deck section.

Con-nector	No. of pins	Parts Number	Connection
①	8	PPU58655A-8	$\boxed{1}\boxed{8}$ DISPLAY CN1 ↔ $\boxed{0}\boxed{1}$ VTR CN1
②	12	YUJ41361B-12	OPERATION (DECK) CN1 ⬌ $\boxed{0}\boxed{1}$ VTR CN5
③	4↔10	YUJ41358B-10T	Y/C separator cable ⬌ $\boxed{0}\boxed{1}$ VTR CN15
④	4	YUJ40095A-3	$\boxed{0}\boxed{1}$ VTR CN17 ↔ $\boxed{0}\boxed{5}$ TRIGGER CN1

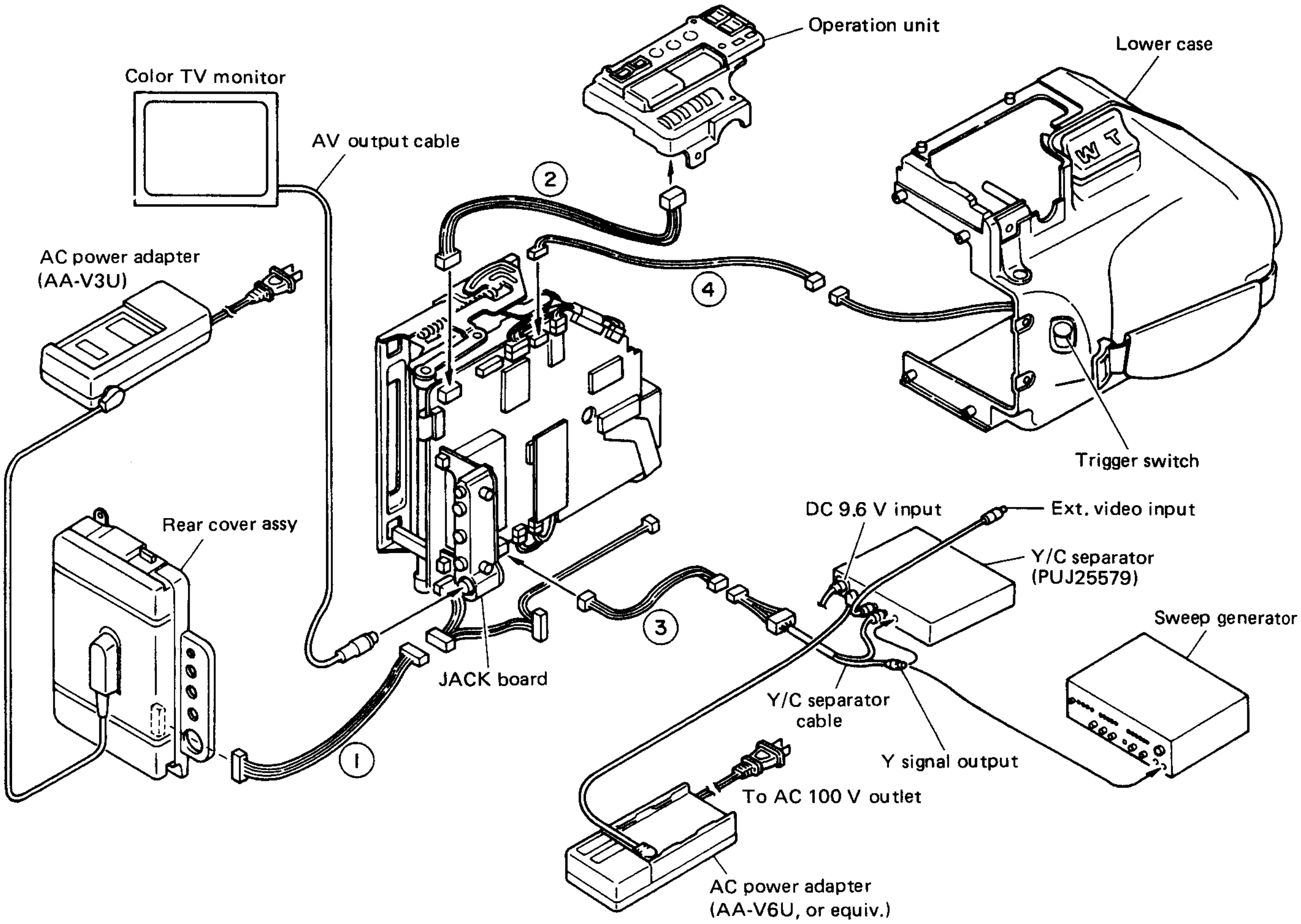

Operation unit
Lower case
Color TV monitor
AV output cable
②
AC power adapter (AA-V3U)
④
Trigger switch
Rear cover assy
DC 9.6 V input
Ext. video input
Y/C separator (PUJ25579)
Sweep generator
③
JACK board
Y/C separator cable
①
Y signal output
To AC 100 V outlet
AC power adapter (AA-V6U, or equiv.)

Fig. 1-6-1 Hookup for inspection and adjustment of deck section

For inspection and adjustment of phase of the mechanism, remove P.C. boards from the deck section.

1.6.2 JACK board

1. Move the JACK board in the direction of the arrow, and disconnect the connectors ① and ②.

Con-nector	No.of pins	Connection
①	6	01 VTR CN2 ⬌ 02 JACK CN1
②	6	01 VTR CN19 ⬌ 02 JACK CN2

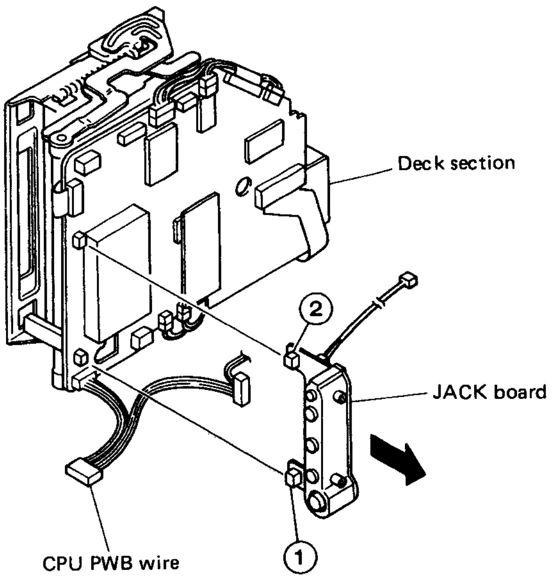


Fig. 1-6-2 JACK board

1.6.3 VTR board

1. Remove a screw Ⓙ and a screw Ⓚ.
2. Disconnect connectors ①, ②, ③, ④, ⑤ and ⑥. Then, the VTR board can be opened.
3. Disconnect connectors ⑦, ⑧, ⑨ and ⑩. Then, the VTR board can completely be detached.

Con-nector	No.of pins	Connection
①	2	01 VTR CN18 ↔ End sensor
②	2	01 VTR CN9 ↔ Mode control motor
③	15	01 VTR CN8 ⇔ Drum motor
④	7	01 VTR CN4 ⇔ 04 SENSOR
⑤	6	01 VTR CN13 ⬌ Flying erase head
⑥	14	01 VTR CN10 ⬌ 03 PRE REC CN1
⑦	4	01 VTR CN6 ↔ Control head
⑧	15	01 VTR CN7 ⇔ Capstan motor
⑨	2	01 VTR CN16 ↔ Dew sensor
⑩	5	01 VTR CN3 ↔ Audio head

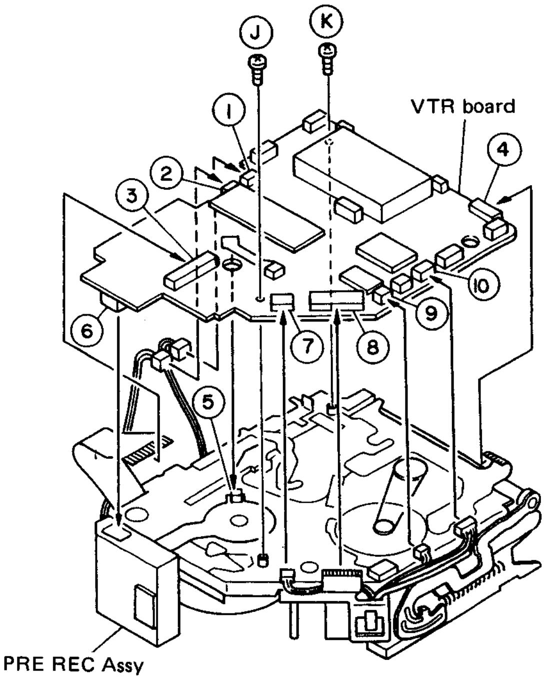


Fig. 1-6-3 VTR board

1.6.4 PRE REC ASSY

1. Draw the CONNECTOR board out in the direction of the arrow (see Fig. 1-6-4).
   At that time, pay attention to 10 pins of the drum terminal not to bend and damage them.
2. Remove a screw Ⓙ and detach the PRE REC Assy from the deck section.

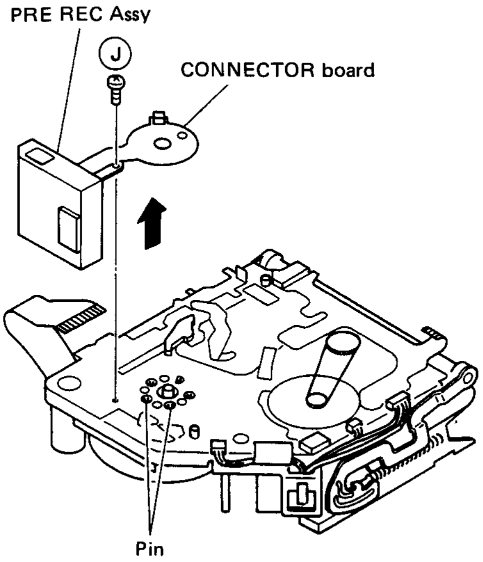


Fig. 1-6-4 PRE REC Assy

1.6.5 SENSOR board

1. Remove three screws Ⓛ and disconnect the connector ①.

Con-nector	No.of pins	Connection
①	3	$\boxed{0}\boxed{4}$ SENSOR CN1 ↔ Camera switch

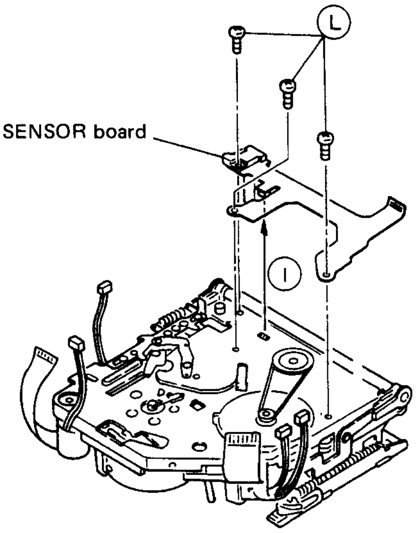


Fig. 1-6-5 SENSOR board

1.6.6 Replacement of cassette housing

1. After detaching the deck section from the camera section in the procedure of Section 1.5.8, move the lock plate in the direction of the arrow ⓐ to set the cassette housing to the Eject mode.

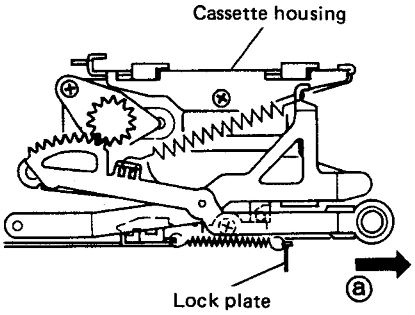


Fig. 1-6-6A Cassette housing - 1

2. Remove two screws Ⓙ.
3. Open the both arms of the cassette housing in the directions of the arrow ⓑ to make them come out of the guide rail of the main deck.
4. Remove the cassette housing in the direction of the arrow ⓒ.

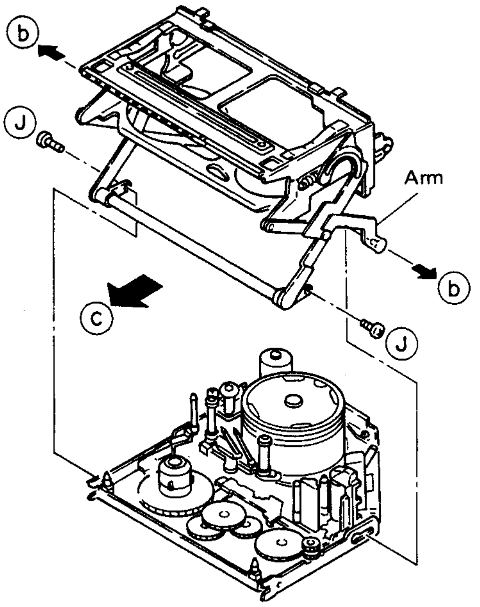


Fig. 1-6-6B Cassette housing - 2

1.6.7 To take out cassette tape

When the deck enters the Emergency mode with a cassette tape loaded and it cannot be ejected by pressing the EJECT button, take the cassette tape out of the cassette housing according to the following procedure.

1. Disconnect the deck from the power source and remove the operation unit, front panel assembly, cassette cover assembly and upper cover assembly according to the descriptions of Sections 1.5.1, 1.5.3, 1.5.4 and 1.5.5 of "Disassembly of Camera Section".
2. Remove wires of the mode control motor as shown in the magnified view Ⓐ (Fig. 1-6-7) and connect jumping wires to the terminals.

   Note: *This is for protection of the Mechacon CPU.*
3. Holding the cassette housing by hand, connect the jumping wires to a UM3 battery and set the mechanism for Unloading as it is in the Eject mode. In this condition, turn the take-up gear (see the magnified view Ⓑ) in the direction of the arrow ⓐ (toward the drum) to wind the tape. Checking up whether the tape is damaged or not, stop holding of the cassette housing by hand.

   Note: *If the mechanism comes into the unloading mode as the cassette tape is not held by hand, it results in tape damage.*

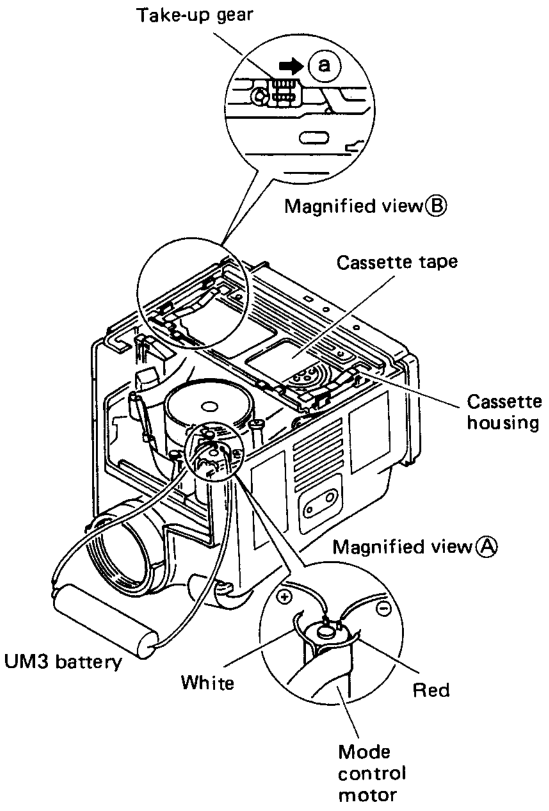

Take-up gear
ⓐ
Magnified viewⒷ
Cassette tape
Cassette housing
Magnified viewⒶ
⊕
⊖
UM3 battery
White
Red
Mode control motor

Fig. 1-6-7 To take out cassette tape

1.6.8 Replacement of upper drum

Note: *Be very careful not to touch any head of a new upper drum as well as not to damage the drum.*

- **Removal**

1. Carefully unsolder at 10 points shown in Fig. 1-6-8 on the UPPER DRUM board.

   Note: *If solder is not completely removed, it may cause damage of the head pins when the upper drum is removed.*

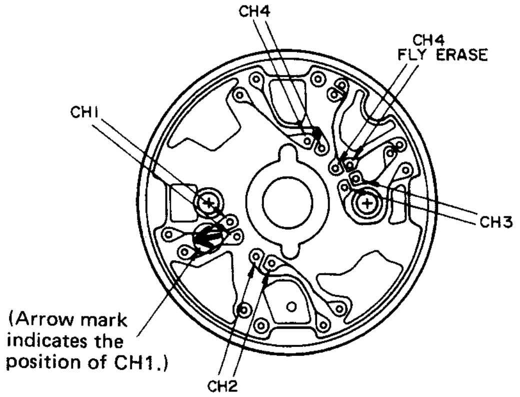

CH4
CH4
FLY ERASE
CHI
CH3
(Arrow mark indicates the position of CH1.)
CH2

Fig. 1-6-8 Upper drum replacement (1)

2. Remove two screws and draw out the upper drum in the direction of the arrows.

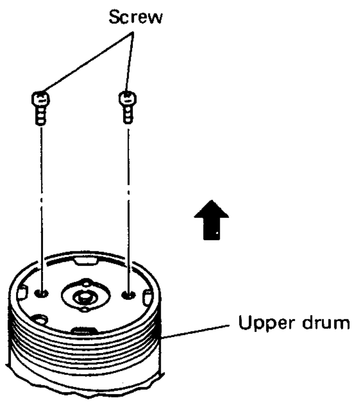

Screw
Upper drum

Fig. 1-6-9 Upper drum replacement (2)

3. When it is hard to remove the upper drum, set the upper drum removal tool (YTU94031A) with the screws which are once removed in the step 2, and tighten the center screw to remove it easily.

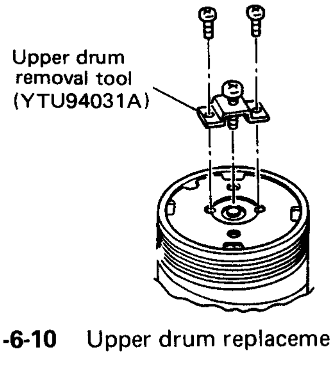

Upper drum removal tool (YTU94031A)

Fig. 1-6-10 Upper drum replacement (3)

- **Installation**

1. Before installing a new upper drum, insert a soldering iron (50 W) into the hole of the upper drum and heat it for about 3 to 5 minutes to expand it.

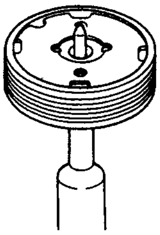


Fig. 1-6-11 Upper drum replacement (4)

2. Set the upper drum so that its hole A and the hole B of the lower drum are positioned oppositely (180°) in a line, and temporarily tighten the two screws.

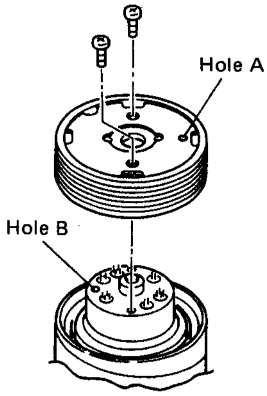

Hole A
Hole B

Fig. 1-6-12 Upper drum replacement (5)

3. Tighten the screws lightly first, then, alternately tighten them gradually as the upper drum is cooled.
4. After replacement finishes, make sure to check up and adjust the following items.
   - Servo and interchangeability
   - Luminance (Y) signal circuit
   - Color (C) signal

1.6.9 Checkup and adjustment of mechanism phase

Note: *Pay careful attention to the installing order and phase of mechanism parts of the loading system.*

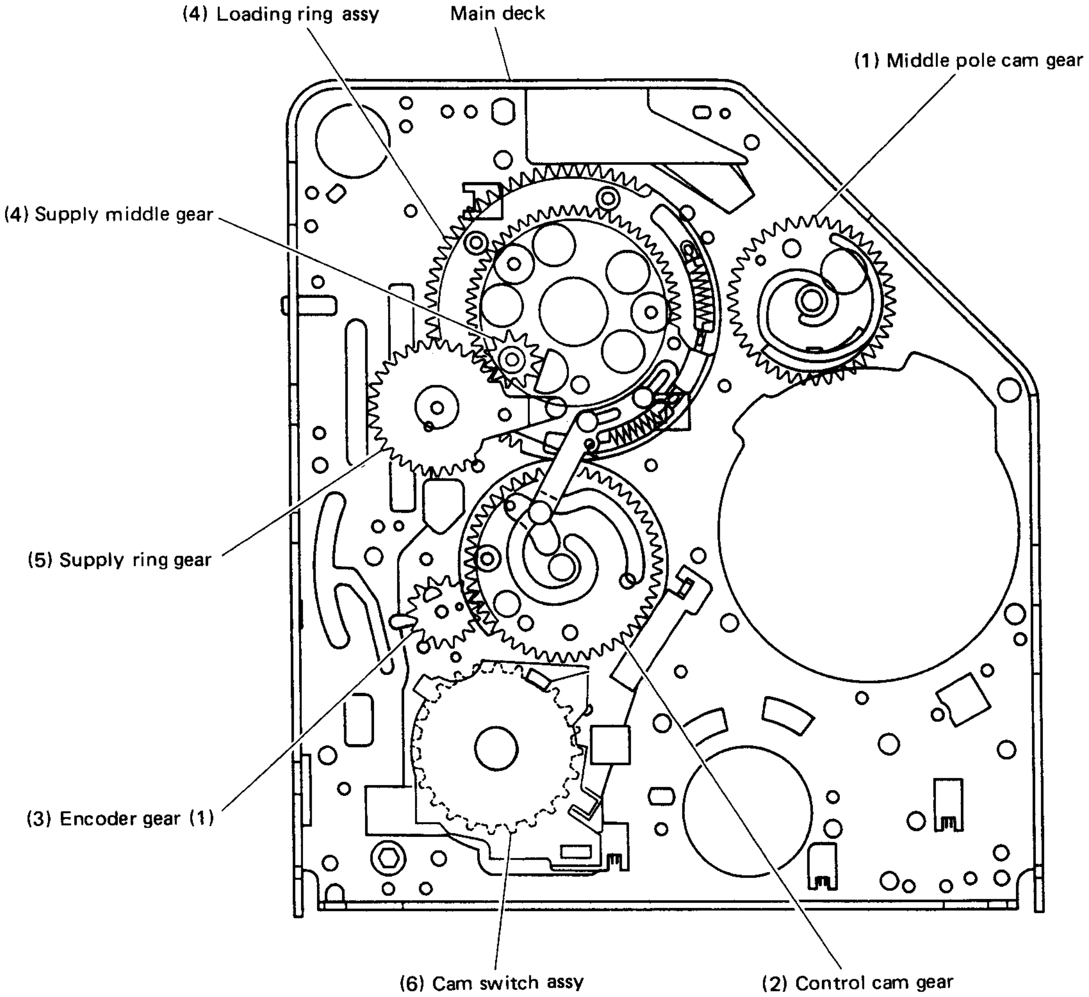

(4) Loading ring assy
Main deck
(1) Middle pole cam gear
(4) Supply middle gear
(5) Supply ring gear
(3) Encoder gear (1)
(6) Cam switch assy
(2) Control cam gear

Fig. 1-6-13 Phase adjustment of loading system

1. Middle pole cam geer
   Position the middle pole cam gear so that its adjusting hole and the hole of the main deck coincide with each other.

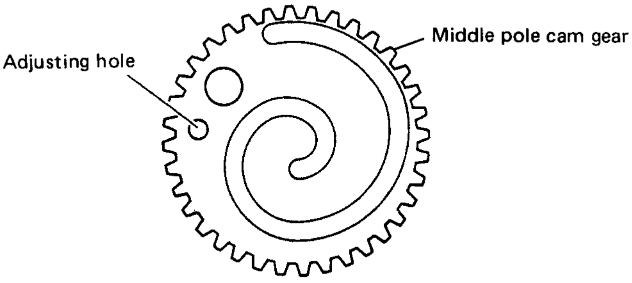

Middle pole cam gear
Adjusting hole

Fig. 1-6-14 Middle pole cam gear

2. Control cam gear
   Position the control cam gear so that its adjusting hole and the hole of the main deck coincide with each other. At that time, confirm that the holes of the link (located on the back of the main deck) and the hole of the main deck coincide with each other.

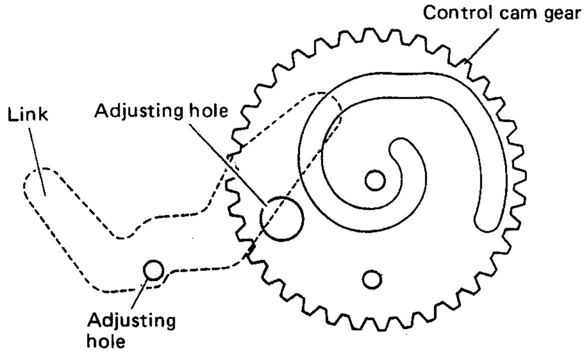

Control cam gear
Link
Adjusting hole
Adjusting hole

Fig. 1-6-15 Control cam gear

3. Encoder gear (1)
   Engage the encoder gear (1) with the control cam gear so that the marking of the encoder cam gear (1) is positioned in the line between the axes of the encoder gear (1) and the control cam gear.

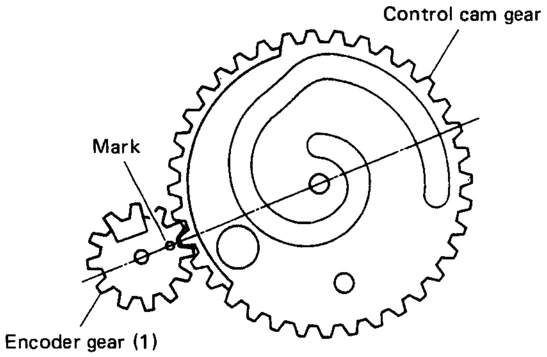

Control cam gear
Mark
Encoder gear (1)

Fig. 1-6-16 Encoder gear (1)

4. Loading ring assembly, supply middle gear
   Engage the supply middle gear with the loading ring assembly so that two teeth of the supply middle gear and the internal first two teeth of the loading ring assy are gearing with each other.

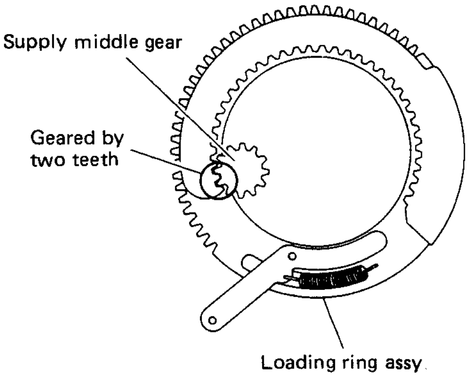

Supply middle gear
Geared by two teeth
Loading ring assy

Fig. 1-6-17 Loading ring assy, supply middle gear

5. Supply ring gear
   Engage the supply ring gear so that its hole coincide with that of the loading ring assy.

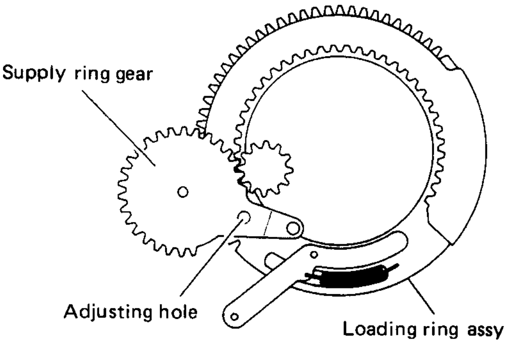

Supply ring gear
Adjusting hole
Loading ring assy

Fig. 1-6-18 Supply ring gear

6. Cam switch assembly
   Set the cam switch assembly so that the notch of its gear teeth coincides with both the rectangle hole Ⓐ and the hole of the main deck.

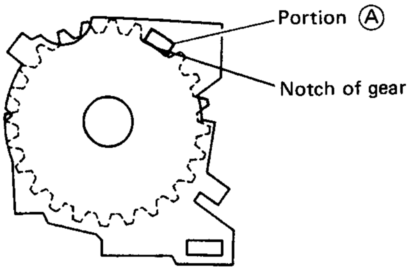

Portion Ⓐ
Notch of gear

Fig. 1-6-19 Cam switch assembly

After completion of the above steps 1 through 6, make sure to confirm that respective phases are correct.
For disassembling, proceed to the above steps in the reverse order.

1.7 INSPECTION AND MAINTENANCE

Since this model is equipped with rotary parts and other parts which may wear as time passes, it is important to clean the tape transport system and rotary parts as well as oiling and greasing rotary parts.

Besides such the maintenance, periodic replacement of worn and consumable parts is required.

Note: Encircled numeral(s) corresponds to the item number shown in Table 1-7-1.

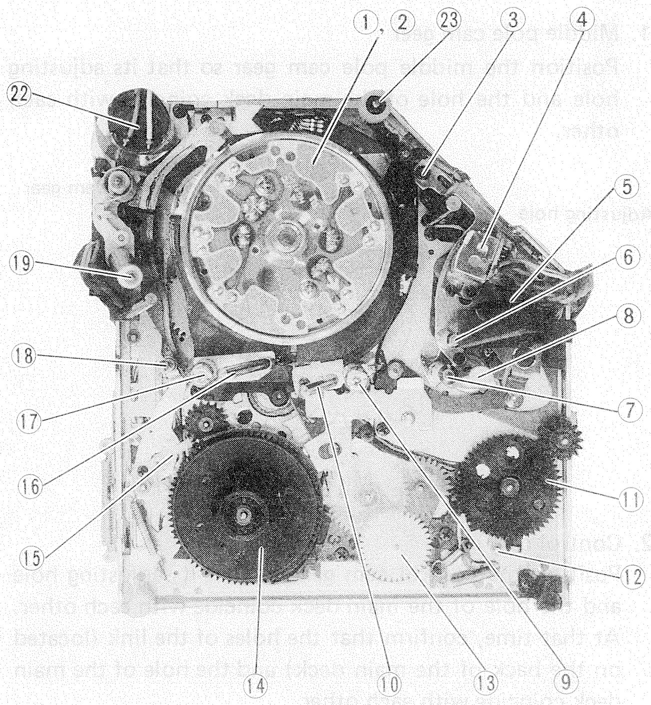


Fig. 1-7-1 Location of main mechanism parts (Top view)

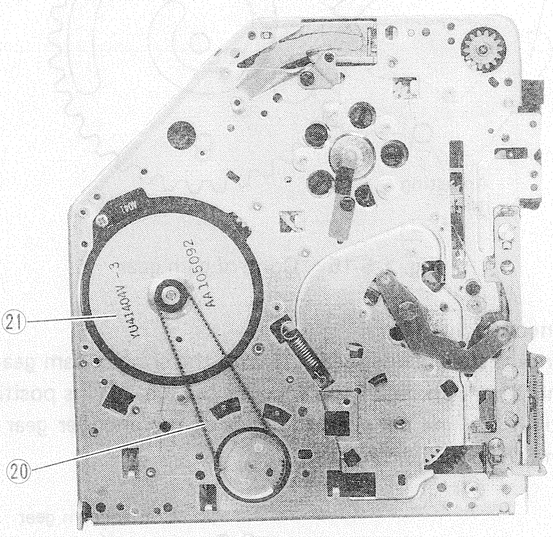


Fig. 1-7-2 Location of main mechanism parts (Bottom view)

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1.7.1 Standard maintenance/inspection schedule of main components

Table 1-6-1 indicates the standard servicing period by component and kind of servicing. In practice, however, the indicated periods will widely vary according to environmental and using conditions. Nunfulfilment of the maintenance work not only shortens the standard period sharply but also influences other components badly.

Also be aware that rubber parts may possibly deform and age as time passes even when the set is not used.

System	Symbol No.	Parts Name	Assy	Periodic servicing schedule (operation hours)								
				250	500	750	1000	1250	1500	1750	2000	3000
Tape transport system	19	Impedance roller		★	★	★	★	★	★	★	★	★
	16	Supply slant pole	a									
	17	Supply guide roller	a									
	18	Tension pole	a									
	7	Middle pole	a									
	6	Take-up guide pole A	a									
	3	Take-up guide pole B	a									
	9	Take-up guide roller	a									
	10	Take-up slant pole	a									
	8	Capstan	a									
	2	Lower drum	a									
	1	Upper drum	a	★	★	☆	●	★	★	☆	●	●
	4	A/C head	a	★	★	★	★	★	★	★	★	●
	5	Pinch roller	a	★	★	★	★	★	★	★	★	●
	23	Head cleaner	a	○	○	○	●	○	○	○	●	●
Drive system	21	Capstan motor	a								●	
	20	Belt					○				●	○
	22	Mode control motor										●
	11	Take-up clutch	a	△	△	△	▲	△	△	△	▲	▲
	14	Supply reel disk	a	△	△	△	▲	△	△	△	▲	▲
	13	Center pulley	a				○				○	○
	12	Search brake lever		★	☆	★	☆	★	☆	★	☆	☆
Other	15	Tension band	a				○				○	○

★ : Cleaning

☆ : Cleaning (or Replacement if necessary)

△ : Lubrication

a : Will be provided as assembly parts for replacement

▲ : Lubrication (or Replacement if necessary)

● : Replacement

○ : Inspection or Replacement if required

Table 1-7-1 Maintenance schedule

1.7.2 Remarks

1. Cleaning

1) For cleaning of the upper drum (particularly video heads), use fine-woven cotton cloth or Kimwipe which alcohol soaks through. Regarding cleaning manner, do not move the cloth but turn the upper drum counterclockwise.
   Note: *Make sure not to move the cloth in the vertical direction to the video head, since it cause damage of the video heads.*
2) For cleaning of parts of the tape transport system except the upper drum, use fine-woven cotton cloth or cotton swab soaked alcohol.
3) After cleaning, confirm that the cleaned parts are completely dry before loading the deck with cassette tape.

2. Applying oil and grease

1) Periodical oiling and greasing are not required but should be done to new parts when replacing. If oil and grease on the parts of the other party are aged and dirty, wipe them and apply new oil or grease.
2) For parts and points to apply oil and grease, refer to the exploded view of the mechanism assembly (M3).
   Table 1-7-2 specifies oil and grease to be used.
3) When oiling, clean the objective parts with alcohol first and apply one or two drop(s) of oil. Too much oiling causes rotary parts to slip because of oil leakage.

Classification	Name	Part No.	Symbol in drawing
Grease	Moriton Grease No.1	MOS2-C	AA
Oil	Cosmo Hydro HV100	YTU94027	BB

Table 1-7-2 Specific oil and grease to be used

3. Checkup

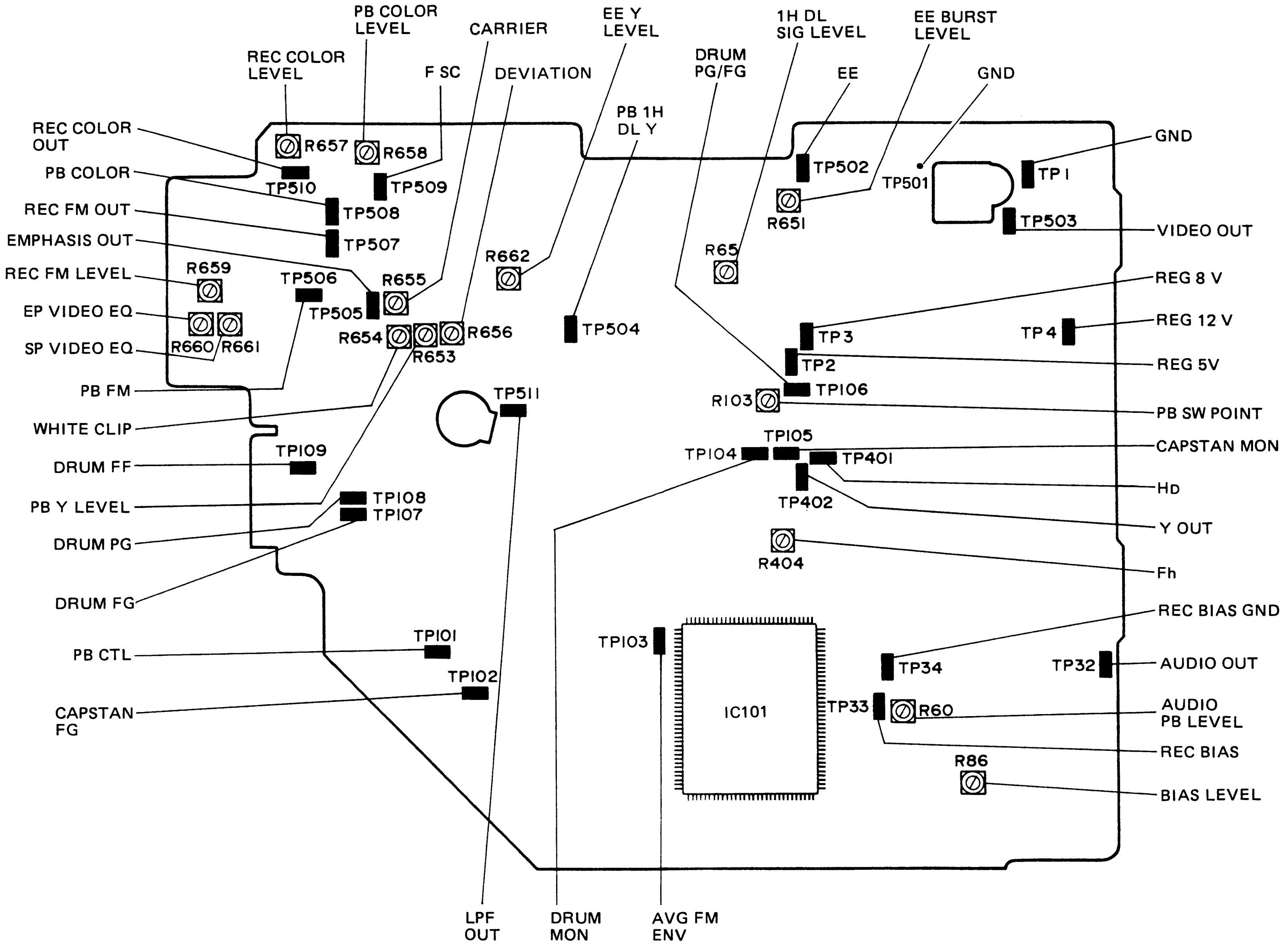
After replacement of the supply reel disk and tension band, make sure to inspect and adjust back tension according to the adjustment procedure of the deck section.

4. Replacement

Replacement parts which are supplied as assembly parts are indicated by "a" in the "Assy" column of Table 1-7-1.

For respective parts numbers, refer to the parts list of the mechanism assembly.

SECTION 2
DECK SECTION ADJUSTMENT


REC COLOR LEVEL
PB COLOR LEVEL
F SC
CARRIER
DEVIATION
EE Y LEVEL
PB 1H DL Y
DRUM PG/FG
1H DL SIG LEVEL
EE
EE BURST LEVEL
GND
REC COLOR OUT
PB COLOR
REC FM OUT
EMPHASIS OUT
REC FM LEVEL
EP VIDEO EQ
SP VIDEO EQ
PB FM
WHITE CLIP
DRUM FF
PB Y LEVEL
DRUM PG
DRUM FG
PB CTL
CAPSTAN FG
GND
VIDEO OUT
REG 8 V
REG 12 V
REG 5V
PB SW POINT
CAPSTAN MON
HD
Y OUT
Fh
REC BIAS GND
AUDIO OUT
AUDIO PB LEVEL
REC BIAS
BIAS LEVEL
LPF OUT
DRUM MON
AVG FM ENV
R657
R658
TP510
TP509
TP508
TP507
R659
TP506
TP505
R655
R662
R660
R661
R654
R653
R656
TP504
TP511
TP109
TP108
TP107
TP101
TP102
TP502
TP501
TP1
TP503
R651
R65
TP3
TP4
TP2
R103
TP106
TP105
TP104
TP401
TP402
R404
TP103
IC101
TP34
TP32
TP33
R60
R86

2.1 PREPARATION

2.1.1 Precaution

In most cases the deck section is in need of electrical adjustment, it results from replacement of worn mechanical parts or video heads.
In the event of malfunction with electrical circuits, troubleshooting with the aid of proper test instruments must be done first, and then commence necessary repair, replacement and adjustment, etc.

1. When loading the deck with a cassette tape, make sure to remove the cassette door beforehand since it contacts with the drum as it is assembled.
2. In case of wiring to chip test points for measurement, use IC clips, etc. to avoid any stress.
3. Since connectors are fragile, carefully handle them in disconnecting and connecting.
4. To operate the deck section with the VTR board which is removed from the mechanism chassis, set the push switch (SW1) to ON.

2.1.2 Connection for adjustment

Disassemble the deck section from the other units, and connect it with test equipment as shown in Fig. 2-1-1.

Connector	No. of pins	Parts No.	Connection
①	8	PPU58855A-8	$\boxed{1}\boxed{8}$ DISPLAY CN1 ↔ $\boxed{0}\boxed{1}$ VTR CN1
②	12	YUJ41361B-12	OPERATION (DECK) CN1 ⬌ $\boxed{0}\boxed{1}$ VTR CN5
③	4↔10	YUJ41358B-10T	Y/C Separator Cable ⬌ $\boxed{0}\boxed{1}$ VTR CN15
④	3	YUJ40095A-3	$\boxed{0}\boxed{1}$ VTR CN17 ↔ $\boxed{0}\boxed{5}$ TRIGGER CN1

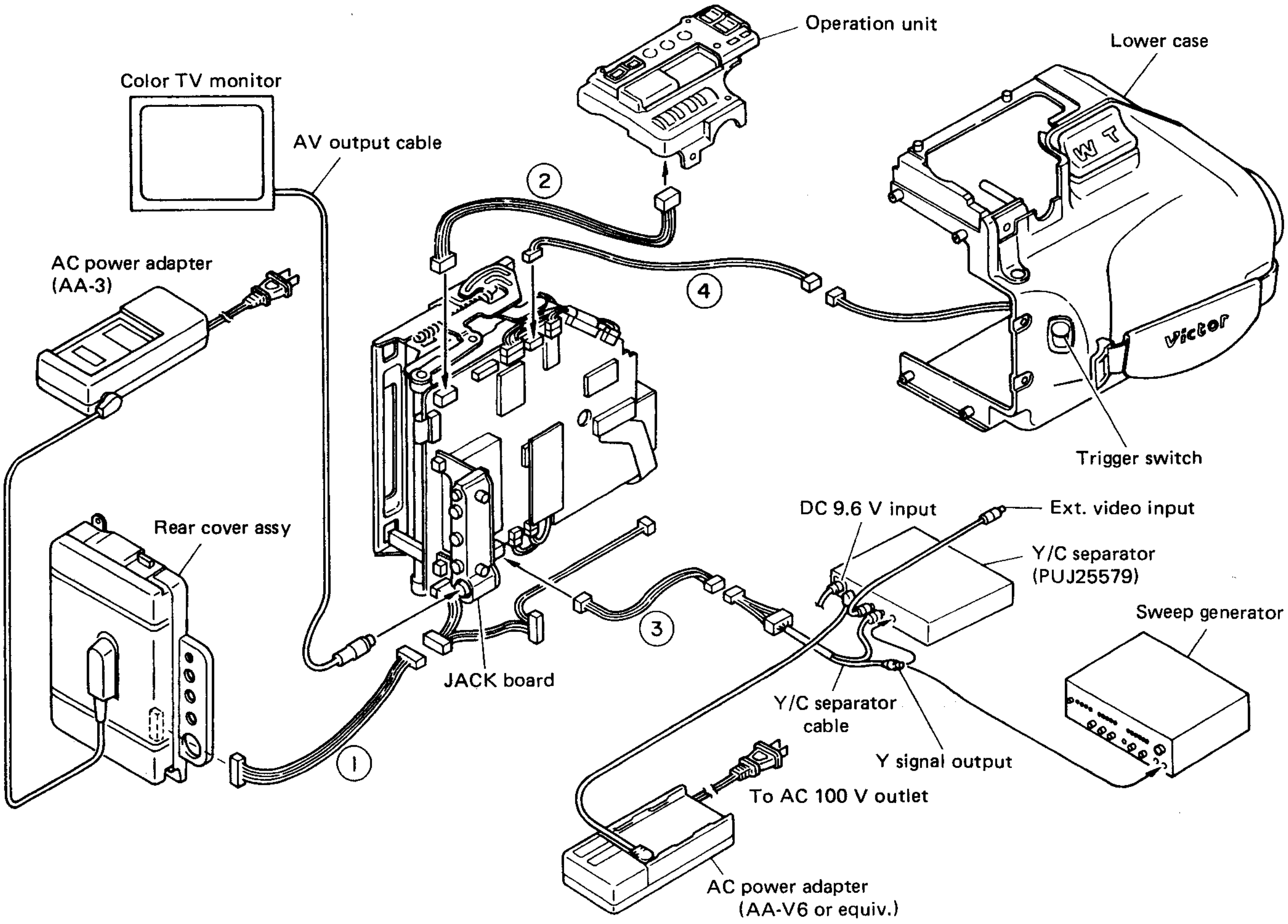
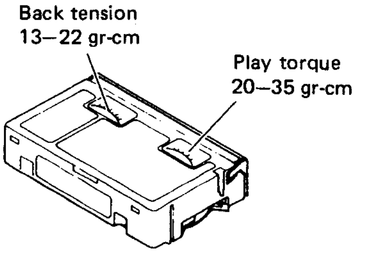
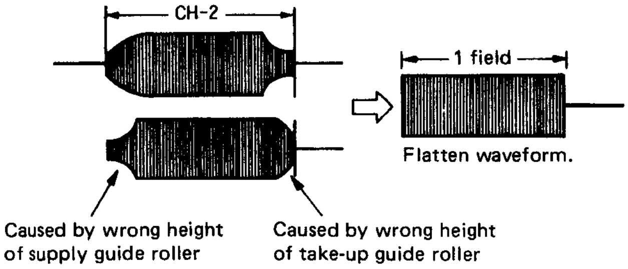
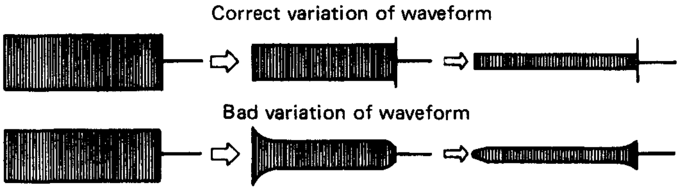
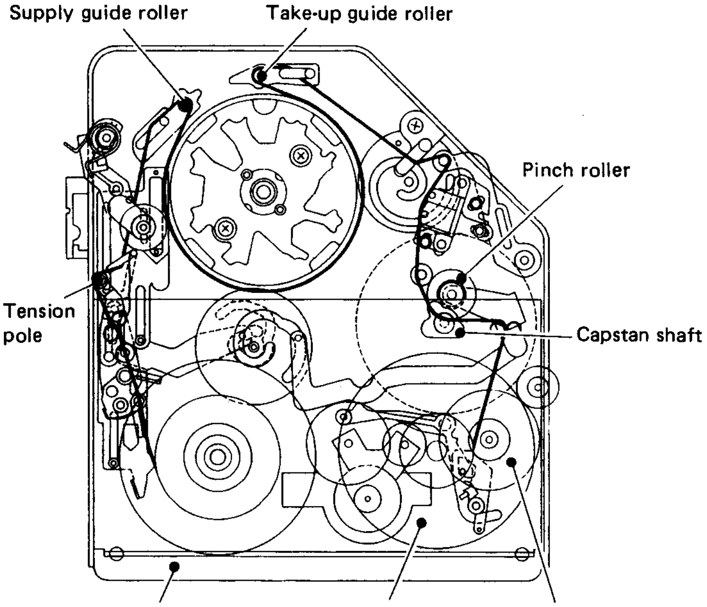
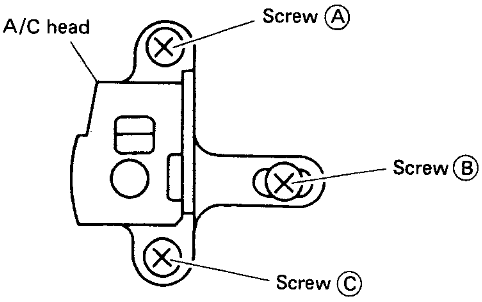
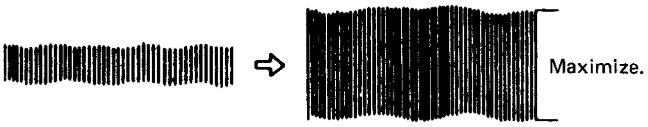

Operation unit
Lower case
Color TV monitor
AV output cable
②
AC power adapter
(AA-3)
④
Victor
Trigger switch
Rear cover assy
DC 9.6 V input
Ext. video input
Y/C separator
(PUJ25579)
Sweep generator
③
JACK board
Y/C separator
cable
①
Y signal output
To AC 100 V outlet
AC power adapter
(AA-V6 or equiv.)

Fig. 2-1-1 Connection for inspection and adjustment of deck section

2.2 SERVO CIRCUIT AND INTERCHANGEABILITY

Note: • *This adjustment must be performed after the upper drum assembly or the lower drum assembly is replaced.*
• *Unless otherwise specified, measurement points and adjustment parts are located on $\boxed{0}\boxed{1}$ VTR board.*

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	Back tension	• REC	• Cassette torque meter  **Fig. 2-2-1** Cassette torque meter	• Cassette torque meter		1) Set a cassette torque meter onto the deck and measure the back tension in the standard REC mode to confirm that the back tension is 13–22 gr-cm. 2) If not, replace the tension band. When the value widely fluctuates in the measurement, replace the supply reel disk. 3) With the cassette torque meter, confirm that the play torque is 20–35 gr-cm. If necessary, replace the take-up clutch assy.
2	Tape pattern	• Play	• Alignment tape EP stairstep (MHP-LC) • Tracking: Manual  CH-2 1 field Flatten waveform. Caused by wrong height of supply guide roller Caused by wrong height of take-up guide roller **Fig. 2-2-2** FM waveform  **Fig. 2-2-3** FM waveform	• TP506 (PB FM) • TP109 (DRUM FF) (Ext.trigger)	• Supply/ Take-up guide roller	1) Observe signal at TP506 with external trigger from TP109. 2) Play back the EP stairstep signal of the alignment tape, and maximize the FM waveform by the tracking button. 3) If the observed FM waveform is not flat, adjust the height of the supply or take-up guide roller with an ordinary screwdriver (–). **Note:** *Slowly turn the guide roller to prevent the tape from damage.* 4) By operating the tracking button (both in + and – directions) in the manual tracking mode, vary the output level of the FM waveform from maximum to minimum and vice versa to confirm that the waveform varies nearly in a flat shape. 5) When the FM waveform breaks in the level varying process, subtly adjust the height of guide rollers at every breaking point so that the waveform varies as flat as possible. Repeat the above steps 4) and 5) several times to confirm that the waveform is flat as a whole. 6) Since respective positions of guide rollers may possibly change in the course of the adjustment, return the mode to the Stop once and then set to the Play mode again for confirmation.

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
		• REC ↓ PB	• Alignment tape SP stairstep (MHP-C or MH-C1) • SP/EP  Supply guide roller Take-up guide roller Pinch roller Tension pole Capstan shaft Cassette Take-up reel Take-up clutch **Fig. 2-2-4** Tape transport system			7) Play back the SP stairstep of the alignment tape and repeat the above step 4) to confirm that the waveform is nearly flat as it was adjusted. **Note:** *In comparison of the waveform adjustment in EP mode with that in SP mode, give priority to EP pattern adjustment for the best.* 8) Record both in SP and EP modes and play back the signal to confirm that the FM waveform is flat in the both modes. **Note:** *If there is FM dropout at the supply side (tape inlet of the drum) in EP/SP REC-PB, check up the back tension first and adjust the parallelism with the alignment tape for the best, and then turn the supply guide pole counterclockwise at an angle of 30° approx.* 9) Through the above adjustments, make sure of no wrinkling/damage in the tape around the impedance roller and take-up guide pole in Loading/Unloading, Search Rewind, and at mode shift from Search Rewind to Play. If tape wrinkling or damage occurs around the take-up guide pole, adjust the contact (angle) of the audio/control head to transport the tape correctly along the lower flange of the guide pole.
3	A/CTL head height & azimuth	• PB	• Alignment tape SP stairstep (Audio 7kHz) (MHP-C or MH-C1)  **Fig. 2-2-5** A/C head  **Fig. 2-2-6** Audio signal	• TP32 (AUDIO OUT)	• A/CTL head	1) Play back the SP 7 kHz segment of the alignment tape and observe waveform at TP32. **Note:** *When the output level is approx. −6 dBs (1.1 Vp-p, 0.39 Vrms) and the level fluctuation is less than −2 dB, adjustment is not required.* 2) If necessary, turn the screw Ⓐ (reference), Ⓑ (bent forward) and Ⓒ (azimuth) gradually (at an angle of 45° approx.) in the same direction to obtain the maximum output level. 3) As final fine adjustment, adjust the screw Ⓑ for minimum level fluctuation and the screw Ⓒ for maximum output level.

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
4	Phase of control head (X value)	• PB	• Alignment tape SP stairstep (MHP-C or MH-C1) • Tracking: Manual • Alignment tape EP stairstep (MHP-LC)	• TP506 (PB FM) • TP109 (DRUM FF) (Ext.trigger)	• Control head	1) Play back the SP stairstep signal of the alignment tape and observe waveform at TP506 with external trigger (+) from TP109. 2) Operate the tracking button in the manual tracking mode and confirm that the FM output level is maximum at the center position of the tracking button as shown in Fig. 2-2-8. 3) If necessary, slightly loosen the setscrews Ⓓ and Ⓔ and insert the tip of the A/C head positioning tool into the notch and guide hole to move the A/C head toward the capstan to the extent. 4) Gradually move the A/C head toward the drum to find the position where the FM output level is maximum for the first time ('a—b' in Fig. 2-2-8). 5) Fine adjust the phase of the A/C head and tighten the setscrews Ⓓ and Ⓔ at the point c which is the midpoint between a and b. 6) Play back the EP stairstep signal of the alignment tape and confirm that the FM waveform is maximized at the center detent position of the tracking button. 7) Confirm that the above steps 2) and 6) are satisfactory at the same time. If not, repeat the steps 3) through 6).

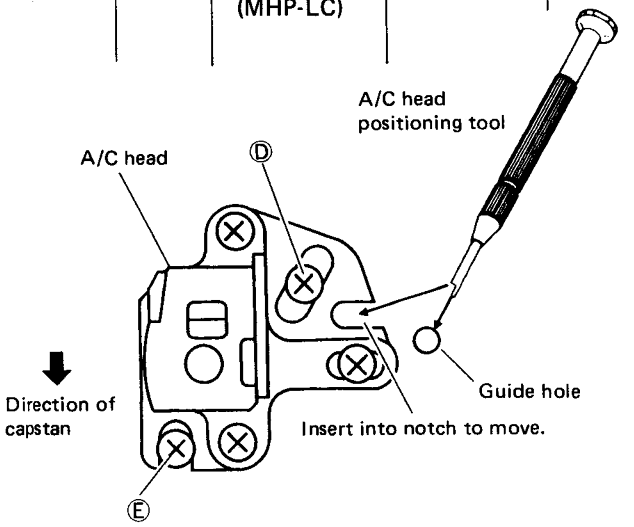


Fig. 2-2-7 Phase of control head

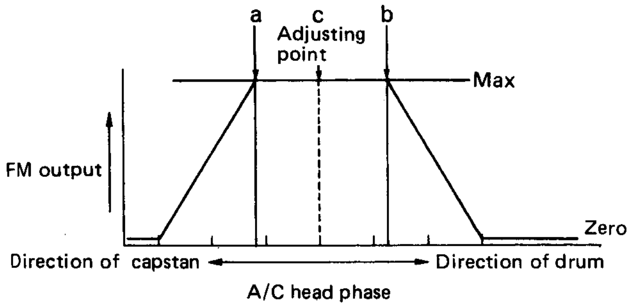
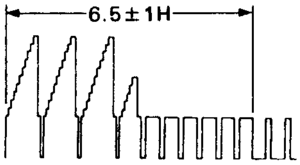
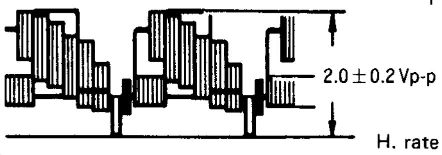
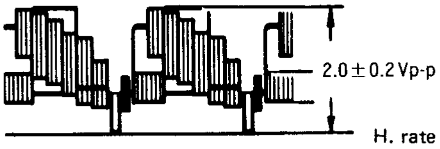
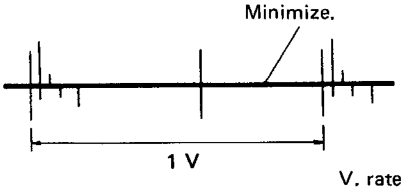
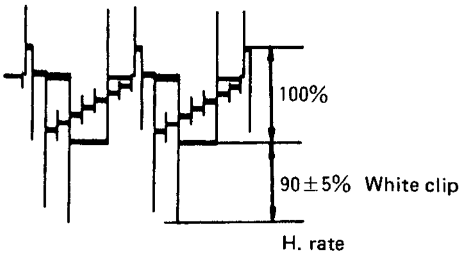


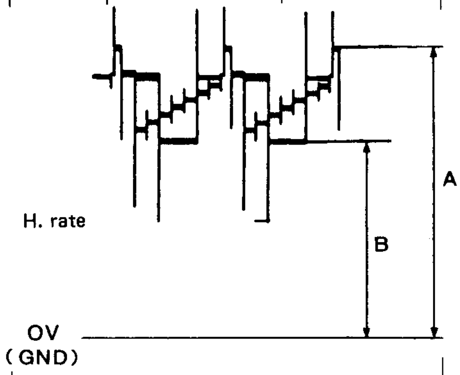
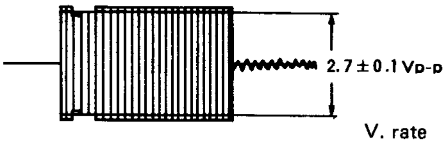
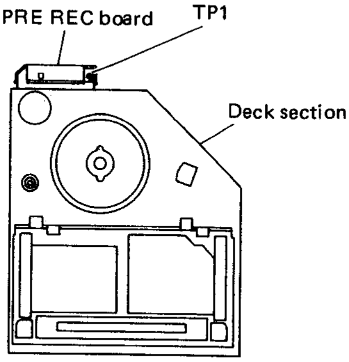
Fig. 2-2-8 Phase adjustment point of control head

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
5	PB switching point	• PB	• Alignment tape SP stairstep (MHP-C or MH-C1) • Tracking: Manual  **Fig. 2-2-9** PB switching point	• TP503 (VIDEO OUT) • TP109 (DRUM FF) (Ext.trigger)	• R103 (PB SW POINT)	1) Play back the SP stairstep signal of the alignment tape. 2) Observe waveform at TP503 with external trigger (–) from TP109. 3) Adjust R103 so that the trigger point is 6.5H before the fall point of V. sync. signal.
6	Horizontal free running frequency	• PB	• Alignment tape SP stairstep (MHP-C or MH-C1)	• TP401 (HD) • TP402 (Y OUT) • TP1 (GND)	• R404 (Fh)	1) Play back the SP stairstep signal of the alignment tape. 2) Connect a frequency counter to TP401 and shortcircuit between TP402 and TP1 with jumper wire. 3) Adjust R404 so that the frequency counter reads $15.750^{+0}_{-0.5}$ kHz.

2.3 LUMINANCE (Y) SIGNAL CIRCUIT

Note: • *Before proceeding to do each adjustment, check the adjustment value.*
• *Unless otherwise specified, all adjustment points and adjustment parts are located on $\boxed{0}\boxed{1}$ VTR board.*

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	EE Y level	• EE	• Color bar  **Fig. 2-3-1** EE Y level	• TP503 (VIDEO OUT)	• R662 (EE Y LEVEL)	1) Adjust R662 so that Y signal level is 2.0 Vp-p at TP503.
2	PB Y level	• PB	• Alignment tape SP color bar (MHV-2C or MH-C1)  **Fig. 2-3-2** PB Y level	• TP503 (VIDEO OUT)	• R653 (PB Y LEVEL)	1) Play back the color bar signal of the alignment tape. 2) Adjust R653 so that Y signal level is 2.0 Vp-p at TP503.
3	1H DL Y level	• PB	• Alignment tape SP color bar (MHV-2C or MH-C1)  **Fig. 2-3-3** 1H DL Y level	• TP504 (PB 1H DL Y)	• R652 (1H DL SIG LEVEL)	1) Play back the color bar signal of the alignment tape. 2) Adjust R652 to minimize the center level of the waveform at TP504.
4	White clip	• EE	• Color bar  **Fig. 2-3-4** White clip	• TP505 (EMPHASIS OUT)	• R654 (WHITE CLIP)	1) Adjust R654 so that white clip of TP505 signal is 90%.

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
						Note: *This item should be adjusted only in the following situations:* *a) EE and PB systems are normal, but sync. is distorted (incorrect carrier setting) in playback of self-recorded signal,* *b) White components are attenuated (wrong deviation),* *c) In spite of recording with input level of 1.0 Vp-p, output level is too small and S/N is very poor.*
5	Carrier/ deviation	• EE	• Color bar	• TP505 (EMPHASIS OUT)		1) Set the oscilloscope to DC mode. 2) Connect the oscilloscope to TP505 and measure DC voltage (A in figure) of the sync. tip and DC voltage (B in figure) of the white peak.
		 **Fig. 2-3-5** Carrier/deviation				
		• REC	• Non signal • SP	• TP507 (REC FM OUT)	• R655 (CAR-RIER) • R656 (DEVI-ATION)	3) Perform recording with non signal input in SP mode and supply DC voltage A to TP505. 4) Connect the frequency counter to TP507 and adjust R655 to obtain 3.4 MHz ± 50 kHz. 5) Next, perform recording with no signal input and supply DC voltage B to TP505. 6) Connect the frequency counter to TP507 and adjust R656 to obtain 4.4 MHz ± 50 kHz.
6	REC FM level	• REC	• Color bar • SP	• TP1 (REC FM OUT) 03 PRE REC	• R659 (REC FM LEVEL)	1) Connect the oscilloscope to TP1 of the PRE REC board. 2) Adjust R659 so that FM level of the pedestal portion is 2.7 Vp-p.
		 **Fig. 2-3-6(A)** REC FM level				 **Fig. 2-3-6(B)** Test point of PRE REC board

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
7	Video EQ	• REC ↓ • PB	• Color sweep • SP/EP	• TP503 (VIDEO OUT)	• R661 (SP VIDEO EQ) • R660 (EP VIDEO EQ)	**Note:** *This item should be adjusted when playback of self-recorded picture is not sharp (too low 2 MHz component) after replacement of the upper drum or when there is B/W reversal (too high 2 MHz component).* 1) Record the color sweep signal in SP mode and play it back to observe waveform at TP503. 2) Set the 100 kHz marker of the color sweep signal for 4 scale divisions on the oscilloscope screen, and adjust R661 so that the 2 MHz marker is for 3.2 scale divisions. 3) Record the color sweep signal in the EP mode and play it back to observe the waveform at TP503. 4) When the 100 kHz marker is for 4 scale divisions on the oscilloscope screen, adjust R660 so that the 2 MHz marker is for 3.0 scale divisions. **Note:** *After reassembling the deck and camera sections, record a high contrasty object in SP and EP modes and play the recorded pictures respectively to confirm that there is no B/W reversal in the most contrasty part and the picture is clear and sharp on the whole.*

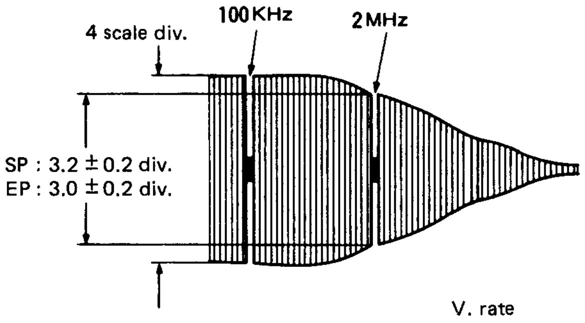
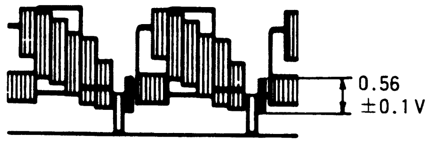
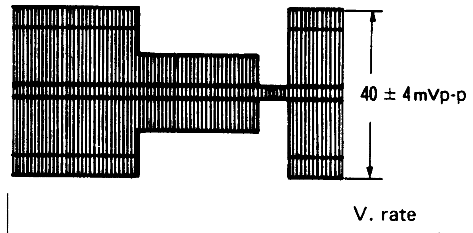
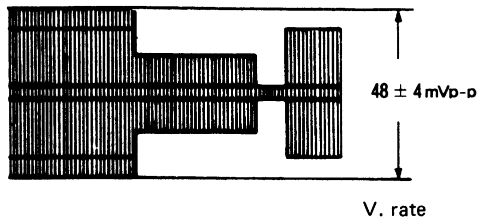


Fig. 2-3-7 Video EQ

2.4 COLOR (C) SIGNAL CIRCUIT

Note: • *Before proceeding to do each adjustment, check the adjustment value.*
• *Unless otherwise specified, all adjustment points and adjustment parts are located on [0][1] VTR board.*

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	EE burst level	• EE	• Color bar  Fig. 2-4-1 EE burst level	• TP503 (VIDEO OUT)	• R651 (EE BURST LEVEL)	1) Adjust R651 so that burst level at TP503 is 0.56 V.
2	PB ACC input level	• PB	• Alignment tape SP color bar (MHV-2C or MH-C1)  Fig. 2-4-2 PB ACC input level	• TP508 (PB COLOR) • TP109 (DRUM FF) (Ext.trigger)	• R658 (PB COLOR LEVEL)	1) Play back the color bar signal of the alignment tape. 2) Observe waveform at TP508 with external trigger from TP109. 3) Adjust R658 to obtain 40 mVp-p as the higher level of channels.
3	REC color level	• REC ↓ • PB	• Color bar • SP  Fig. 2-4-3 REC color level	• TP508 (PB COLOR) • TP109 (DRUM FF) for trigger	• R657 (REC COLOR LEVEL)	1) Observe waveform at TP508 with external trigger from TP109. 2) Record color bars in SP mode and play it back. 3) Adjust R657 so that the higher level of channels is 48 mVp-p.

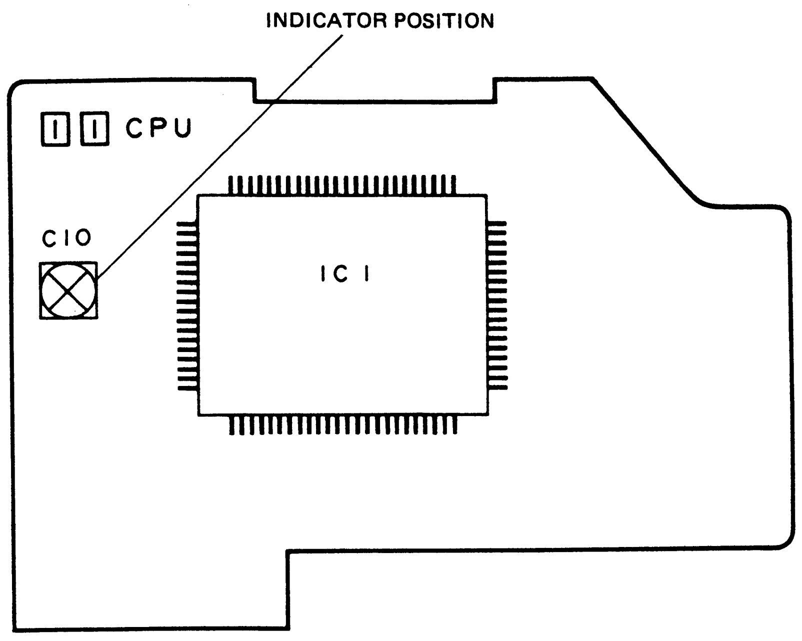
2.5 AUDIO CIRCUIT

Note: *Unless otherwise specified, all adjustment points and adjustment parts are located on [0][1] 'VTR board.*

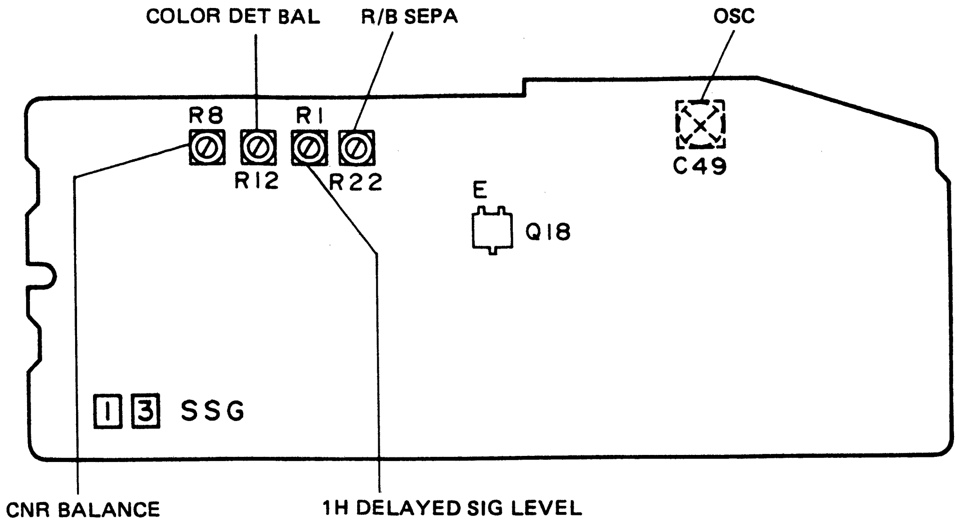
No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	Bias level	• REC	• Non-signal • SP	• TP33 (REC BIAS) • TP34 (REC BIAS GND)	• R86 (BIAS LEVEL)	1) Connect an audio level meter to respective ends of TP33 and TP34. 2) Adjust R86 to obtain –51 dBs (6.5 mVp-p, 2.3 mVrms) in SP REC mode.
2	PB audio level	• EE • REC ↓ • PB	• 1 kHz sine wave • SP	• TP32 (AUDIO OUT)	• R60 (AUDIO PB LEVEL)	1) In EE mode, input 1 kHz, –68 dBs (0.9 mVp-p, 0.32 mVrms) sine wave to the external mic. jack. 2) Fine adjust output of the audio level meter so that signal level at pin 8 of the AV jack of the JACK board is –6 dBs (1.1 Vp-p, 0.39 Vrms). 3) In playback of self-recorded signal, adjust R60 so that signal level at TP32 is –6 dBs (1.1 Vp-p, 0.39 Vrms).

SECTION 3
CAMERA SECTION ADJUSTMENT

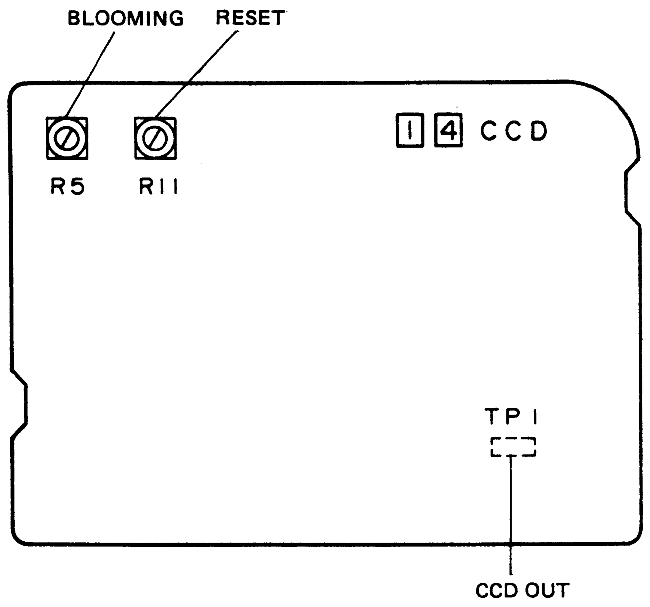
- **Location of test points and adjustment parts on camera section PWBs**



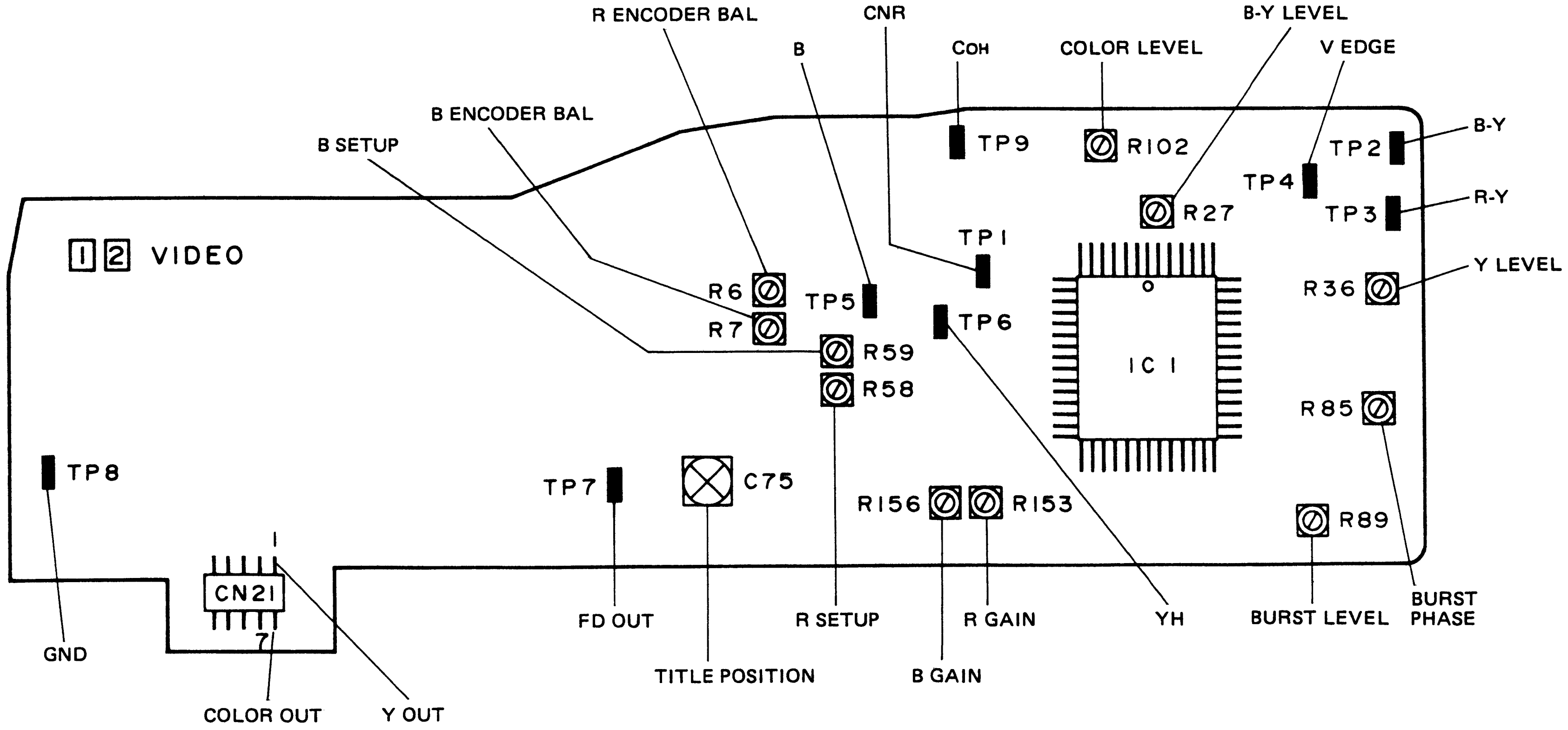
INDICATOR POSITION
1 1 CPU
C10
IC 1



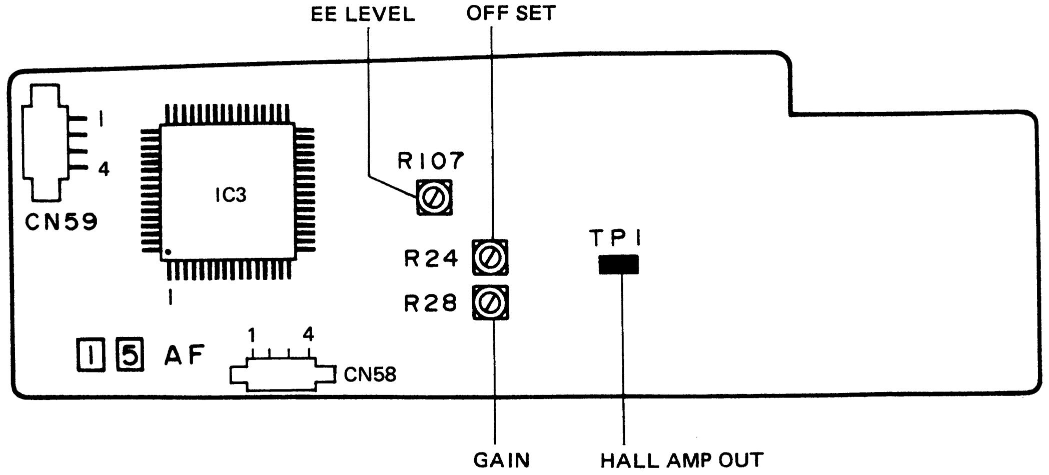
COLOR DET BAL
R/B SEPA
OSC
R8
R1
R12
R22
C49
E
Q18
1 3 SSG
CNR BALANCE
1H DELAYED SIG LEVEL



BLOOMING
RESET
R5
R11
1 4 CCD
TP1
CCD OUT



R ENCODER BAL
CNR
B
COH
COLOR LEVEL
B-Y LEVEL
V EDGE
B ENCODER BAL
B SETUP
TP9
R102
TP2
B-Y
TP4
R27
TP3
R-Y
1 2 VIDEO
TP1
R6
TP5
R7
TP6
IC 1
R36
Y LEVEL
R59
R58
R85
TP8
TP7
C75
R156
R153
R89
1
CN21
7
GND
FD OUT
R SETUP
R GAIN
YH
BURST LEVEL
BURST PHASE
TITLE POSITION
B GAIN
COLOR OUT
Y OUT



EE LEVEL
OFF SET
1
4
CN59
IC3
R107
R24
TP1
R28
1
1 5 AF
1 4
CN58
GAIN
HALL AMP OUT

3.1 PREPARATION

3.1.1 Precaution

1. Use two or more lighting apparatuses (3100 K in color temperature) and light up a test pattern by them at 1200 lux or more brightly.
2. Use a clean test pattern and lens filters.
3. All adjustments must be performed in a room that shuts out other light than the specific illumination.
4. For observing waveform by an oscilloscope at H. rate, connect CH-B of the oscilloscope with pin 1 (Y OUT) of CN21 of 12 VIDEO board synchronizing with minus trigger, while connect CH-A to a specified test point for measurement.
5. During adjustments, make sure to shoot a color bar pattern and a gray scale by manual focusing to avoid undesirable zooming to focus on another object by auto focus operation. For, this camera employs the full range auto focus system (1.5 cm to infinite) and zoom operation and focusing are interlocked.
6. For adjustments, set the camera to the following operation mode unless otherwise indicated.
   - Rehearsal mode
   - Standard shutter speed
   - Manual focusing

3.1.2 Basic operation of E. VR device

For the auto white balance adjustment described in Section 3.3.2, use the E. VR device according to the following procedure.

1. Connect the E. VR device to the camera with no power supplied to the both.
2. Turn on the E. VR device by switching the POWER ON/RESET button. (All LEDs light.)
3. Connect the camera's power cable to an AC power adapter.
4. Press the START button of the E. VR device.
5. Turn on the camera. (Indication is displayed in the TV monitor.)
6. Proceed to do the auto white balance adjustment according to the description of Section 3.3.2.
7. After the adjustment, turn off the E. VR device first and then turn off the camera, and disconnect them.

3.1.3 Connection for adjustment

Referring to Section 1, disassemble the camera section from other units and make connections as follows.

Connector	No.of pins	PART No.	Connection
①	8	PPU58655A-8	18 DISPLAY CN1 ←→ 01 VTR CN1
②	9	PPU58655A-8	17 JUNCTION CN2 ←→ 11 CPU CN16
③	12	YUJ41361B-12	OPERATION (DECK) CN1 ⬌ 01 VTR CN5
④	10	YUJ41361B-10	12 VIDEO CN21 ⬌ 01 VTR CN15
⑤	7	YUJ40095A-7	11 CPU CN15 ←→ Auto white sensor
⑥	16	YUJ41358B-16T	11 COP CN11 ⬌ 01 VTR CN14 EVR ADJUSTER

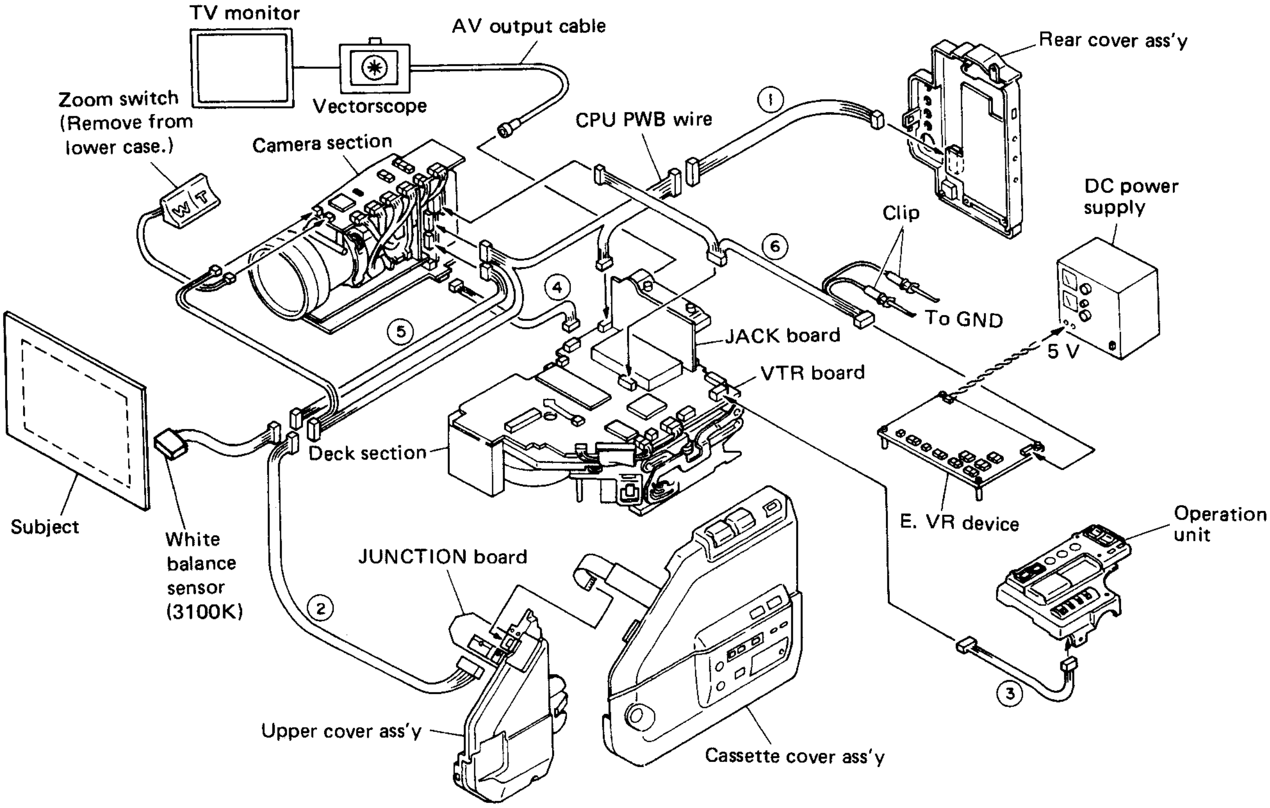
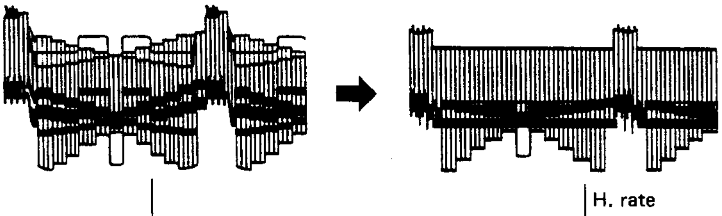
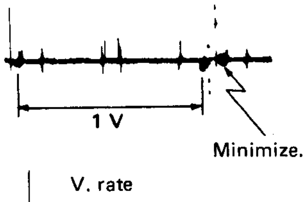
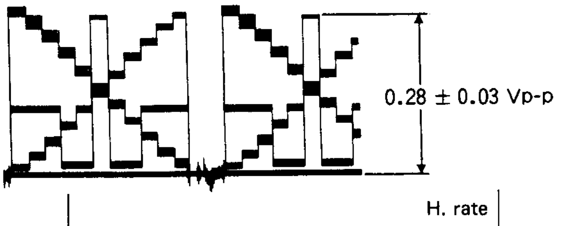
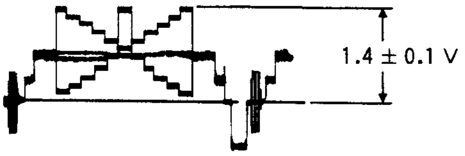

TV monitor
AV output cable
Rear cover ass'y
Zoom switch (Remove from lower case.)
Vectorscope
CPU PWB wire
①
Camera section
DC power supply
Clip
⑥
④
To GND
⑤
JACK board
5 V
VTR board
Deck section
Subject
White balance sensor (3100K)
E. VR device
Operation unit
JUNCTION board
②
③
Upper cover ass'y
Cassette cover ass'y

Fig. 3-1-1 Connection for auto focus adjustment

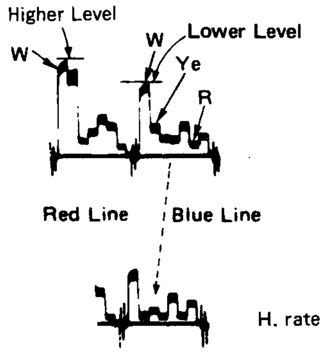
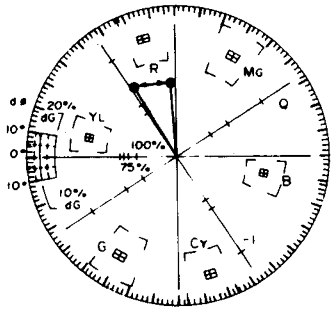
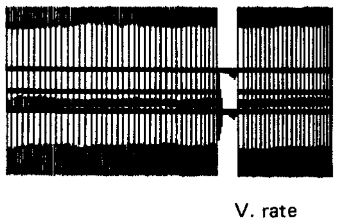
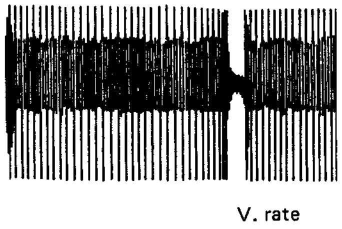
3.2 LUMINANCE (Y) SIGNAL CIRCUIT

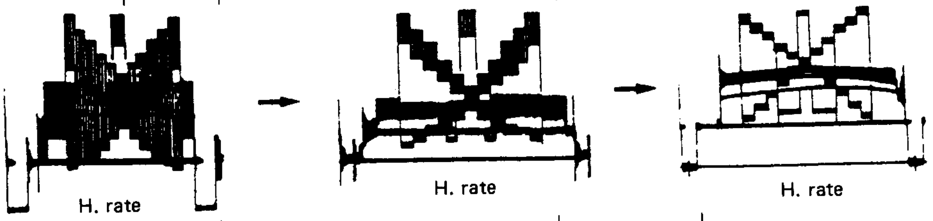
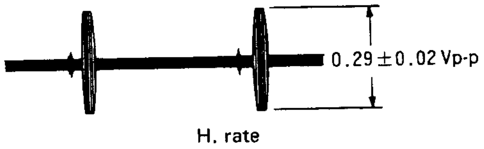
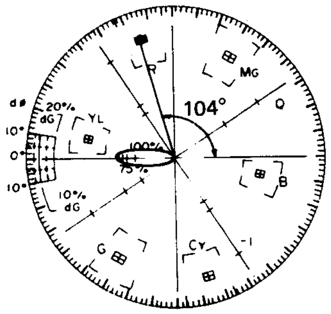
No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	Reset bias	• EE	• Gray scale  **Fig. 3-2-1** CCD OUT	• TP1 (CCD OUT) [1][4] CCD	• R11 (RESET) [1][4] CCD	1) Pick up the gray scale and observe waveform at TP1. 2) Adjust R11 to flatten and maximize the waveform.
2	Osc. freq.	• EE		• Q18 emitter [1][3] SSG	• C49 (OSC) [1][3] SSG	1) Connect a frequency counter to the emitter of Q18 of the SSG board and adjust C49 to obtain 9.53496 MHz.
3	Vertical enhancer balance	• EE	• Gray scale  **Fig. 3-2-2** V. edge	• TP4 (V. EDGE) [1][2] VIDEO	• R1 (1H DELAYED SIGNAL LEVEL) [1][3] SSG	1) Pick up the gray scale and observe waveform at TP4. 2) Adjust R1 to minimize average level of the waveform.
4	Hall element	• EE	• Iris: Closed • Iris: Open • Gray scale	• TP1 (HALL AMP OUT) • CN59 pin 4 [1][5] AF • TP8 (GND) [1][2] VIDEO • TP2 (REG 5 V) [0][1] VTR	• R24 (OFFSET) [1][5] AF R28 (GAIN) [1][5] AF	1) Shortcircuit between pin 4 of CN59 of the AF board and TP8 of the VIDEO board with jumper wire, and close the iris. 2) Connect a digital voltmeter to TP1 and adjust R24 so that the meter reads $1.0^{+0.3}_{-0}$ V DC. 3) Disconnect jump wire. 4) Shortcircuit between pin 4 of CN59 of the AF board and TP2 of the VTR board with jumper wire, and open the iris. 5) Pick up the gray scale and adjust R28 so that signal level at TP1 is $3.9^{+0}_{-0.1}$ V DC.
5	EE level	• EE	• Gray scale  **Fig. 3-2-3** EE level	• TP6 (YH) [1][2] VIDEO	• R107 (EE LEVEL) [1][5] AF	1) Pick up the gray scale and adjust R107 so that waveform level at TP6 is 0.28 Vp-p.

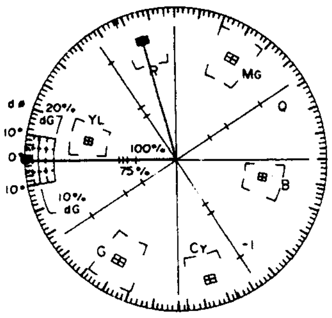
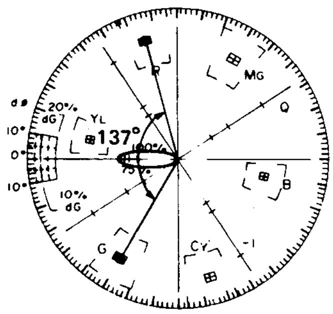
No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
6	Y level	• EE	• Gray scale	• TP503 (VIDEO OUT) 01 VTR	• R36 (Y LEVEL) 12 VIDEO	1) Pick up the gray scale and observe waveform at TP503. 2) Adjust R36 so that the waveform level becomes 1.4 V.
	 **Fig. 3-2-4** Y level					
7	Blooming	• EE		• TV monitor screen	• R5 (BLOOMING) 14 CCD	1) Pick up a fluorescent light and adjust R5 to minimize blooling. **Note:** *No matter how further R5 is turned, there will be no change in blooming observed on the monitor. Therefore, set R5 to a position where blooming is minimum and won't change any more.*
8	Indicator position	• EE	• Lens: Closed	• TV monitor screen	• C10 (INDICATOR POSITION) 11 CPU	1) Close the lens with the cap. 2) Press the Display mode button to display the 'Low Contrast' indication on the TV monitor screen. 3) Adjust C10 to position the Low Contrast indication in the center of the careen.
9	Title position	• EE		• TP7 (FD OUT) 12 VIDEO	• C75 (TITLE POSITION) 12 VIDEO	1) Connect a digital voltmeter to TP7 and adjust C75 to obtain 2.0 ± 0.1 V DC as level at TP7.

3.3 COLOR (C) SIGNAL CIRCUIT

3.3.1 Standard indoor mode

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	R/B separation  Higher Level W W Lower Level Ye R Red Line Blue Line H. rate Fig. 3-3-1 R/B balance	• EE	• Color bar	• TP5 (B) • CN21 pin 1 (Y OUT) [1][2] VIDEO	• R22 (R/B SEPA.) [1][3] SSG	1) Connect an oscilloscope to TP5. 2) Connect jumper wire to pin 1 of CN21 for external trigger and observe the blue line (see Fig. 3-3-1) with the oscilloscope as it is set to the Hold Off mode. 3) Adjust R22 to equalize levels of the yellow and red lines.
2	Color difference balance	• EE  R MG Q YL B G CY -I dB 20% dG 10° 0° 10° 100% 75% 10% dG Fig. 3-3-2 Color difference balance	• Color bar	• Vectorscope	• R12 (COLOR DET BAL) [1][3] SSG	1) Pick up the color bar pattern. 2) Adjust R12 so that dots meet each at the same point on the vectorscope.
3	CNR balance	• EE  Fig. 3-3-3(A) CNR balance (1)  Fig. 3-3-3(B) CNR balance (2)	• Color bar	• TP1 (CNR) [1][2] VIDEO	• R8 (CNR BALANCE) [1][3] SSG	1) Connect the oscilloscope to TP1. 2) Adjust R8 to flatten the waveform.

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
4	White balance	• EE	• Gray scale	• TP503 (VIDEO OUT)	• R6 (R ENCODER BAL) • R7 (B ENCODER BAL) • R153 (R GAIN) • R156 (B GAIN) [1][2] VIDEO	1) Pick up the gray scale and observe waveform at TP503. 2) Alternately adjust R6 and R7 to minimize carrier leakage in the lower 1st and 2nd steps of the waveform. 3) Next, alternately adjust R153 and R156 to minimize carrier leakage in the higher 1st and 2nd steps of the waveform. 4) Repeat the above steps 2) and 3) to minimize carrier leakage in the both.
	 **Fig. 3-3-4** White balance					
5	Burst level	• EE	• Lens: Closed	• CN21 pin 7 (COLOR OUT) [1][2] VIDEO	• R89 (BURST LEVEL) [1][2] VIDEO	1) Close the lens with the cap. 2) Connect the oscilloscope to pin 7 of CN21. 3) Adjust R89 so that the burst level is 0.29 Vp-p.
	 **Fig. 3-3-5** Burst level					
6	Burst phase	• EE	• Color bar	• Vectorscope	• R85 (BURST PHASE) [1][2] VIDEO	1) Pick up the color bar pattern. 2) Adjust R85 so that the phase of R signal is 104° at an angle (reference position of R's phase) on the vectorscope.
	 R MG 104° Q dθ 20% dG YL 10° 0° 10° 100% 75% B 10% dG G CY -I **Fig. 3-3-6** Burst phase					

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
7	Color level	• EE	• Color bar  dφ 20% dG YL 10° 0° 10° 100% 75% 10% dG R MG Q B G CY -I **Fig. 3-3-7** Color level	• Vectorscope	• R102 (COLOR LEVEL) 1 2 VIDEO	1) Pick up the color bar pattern. 2) Adjust the gain control of the vectorscope so that the burst level is set on the outer edge of the vectorscope screen. 3) Adjust R102 to set R level so that its dot is positioned in the center of the square ⊞. 4) Confirm that both adjustment results of the item No. 5 'Burst level' and this item (No. 7 'Color level') are satisfactory. If not, repeat the two adjustments alternately until they meet the specifications respectively.
8	Color phase	• EE	• Color bar  dφ 20% dG YL 10° 0° 10° 137° 100% 75% 10% dG R MG Q B G CY -I **Fig. 3-3-8** Color phase	• Vectorscope	• R27 (B-Y LEVEL) 1 2 VIDEO	1) Pick up the color bar pattern. 2) Adjust R27 so that correlative angle of R and G phases is 137° on the vectorscope.

3.3.2 Auto white balance

Note: *This adjustment must be performed only when either IC2 of the CPU board or the white balance sensor is replaced.*

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	R/G, B/G gain select setting	• EE	• White sensor: 3100 K		• 57 (TABLE) • 40 (R/G GAIN SELECT) • 41 (B/G GAIN SELECT) [E. VR]	1) Apply light of 3100 K to the white sensor. 2) Set data of the channel 57 of the E. VR device to '01'. 3) Select the channel 40 of the E. VR device and press the MEMORY switch. 4) Select the channel 41 of the E. VR device and press the MEMORY switch.
2	G offset setting	• EE	• White balance sensor: Unexposed		• 58 (G OFFSET) [E. VR]	1) Cover the white balance sensor with black cloth etc. not to be exposed to light. 2) Select the channel 58 of the E. VR device and press the MEMORY switch.
3	Indoor R/G, B/G setting	• EE	• White sensor: 3100 K		• 42 (INDOOR R/G) • 43 (INDOOR B/G) [E. VR]	1) Apply light of 3100 K to the white sensor. 2) Select the channel 42 of the E. VR device and press the MEMORY switch. 3) Select the channel 43 of the E. VR device and press the MEMORY switch.
4	Outdoor R/G, B/G setting	• EE	• White sensor: 3100 K • C12 filter		• 44 (OUTDOOR R/G) • 45 (OUTDOOR B/G) [E. VR]	1) Attach a C12 filter to the white sensor and apply light of 3100 K to it. 2) Select the channel 44 of the E. VR device and press the MEMORY switch. 3) Select the channel 45 of the E. VR device and press the MEMORY switch.
5	VRS, VBS setting	• EE			• 55 (VRS) • 56 (VBS) [E. VR]	1) Select the channel 55 of the E. VR device and press the MEMORY switch. 2) Select the channel 56 of the E. VR device and press the MEMORY switch.

3.4 AUTO FOCUS ADJUSTMENT

3.4.1 Connection for adjustment

Referring to Section 1, disassemble the camera section from the other units and make connections as follows.

Connector	No. of Pins	Parts No.	Connection
①	8	PPU58655A-8	18 DISPLAY CN1 ↔ 01 VTR CN1
②	9	PPU58655A 9	17 JUNCTION CN2 ↔ 11 CPU CN16
③	12	YUJ41361B-12	01 VTR CN5 ⬌ OPERATION (DECK)
④	10	YUJ41361B-10	12 VIDEO CN21 ⬌ 01 VTR CN15
⑤	16	YUJ41361B-16	11 CPU CN11 ⬌ 01 VTR CN14
⑥	30	YUJ41358B-30	12 VIDEO CN24 ⬌ 13 SSG CN32
⑦	14	YUJ41358B-14	11 CPU CN13 ⬌ 13 SSG CN31
⑧	6	YUJ41358B-6	DC-DC converter CN61 ⬌ 15 AF CN52
⑨	16	YUJ41358B-16	11 CPU CN14 ⬌ 15 AF CN51

Set the camera (and camera subjects) so that the distance between the lens surface and a subject is infinity (∞) or 2.0 ± 0.06 m. The setscrew of the infinite sensor can be adjusted through the AF adjustment hole provided on the CCD board.

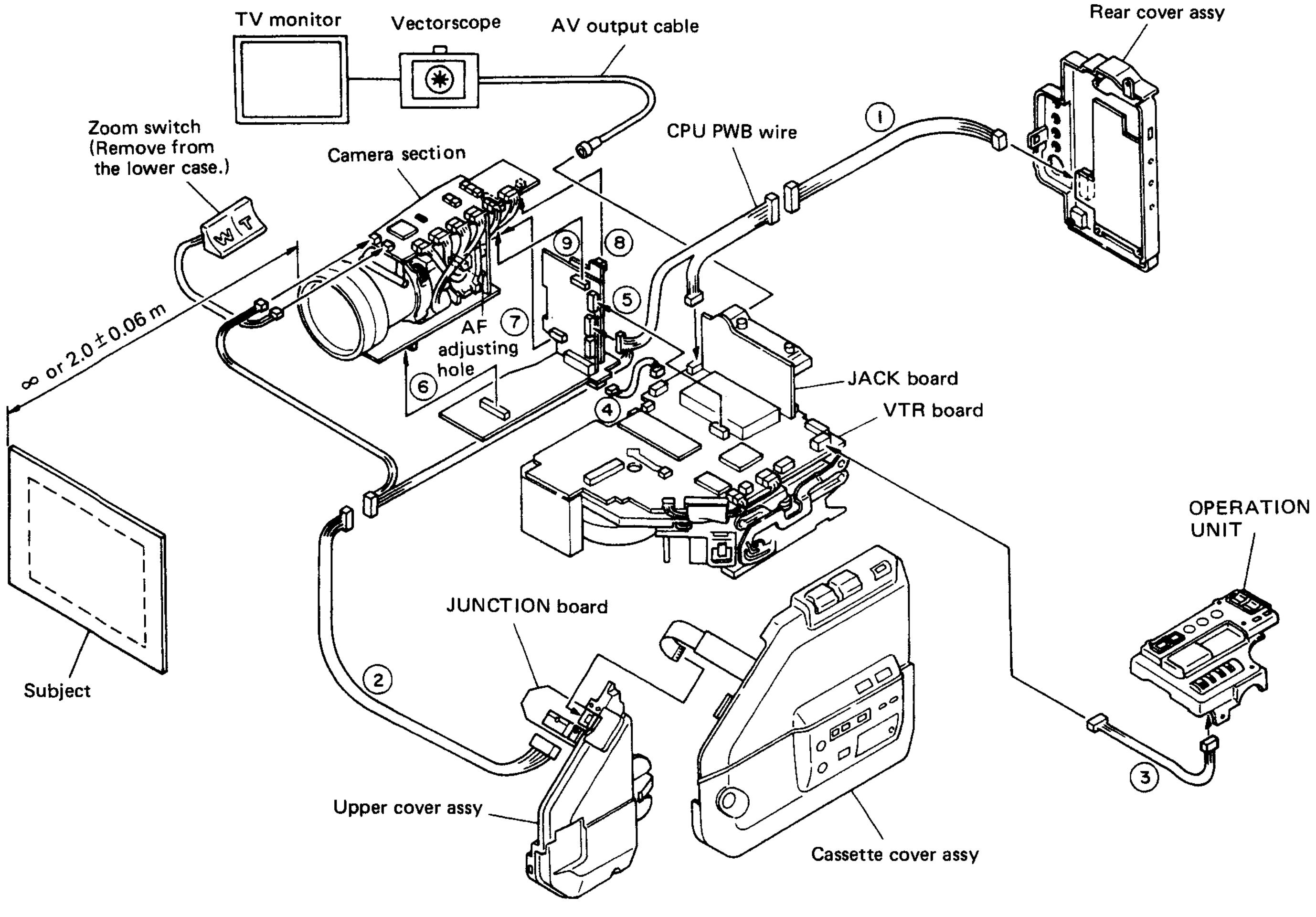
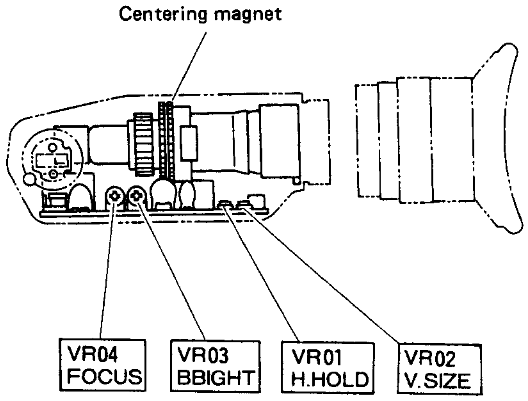
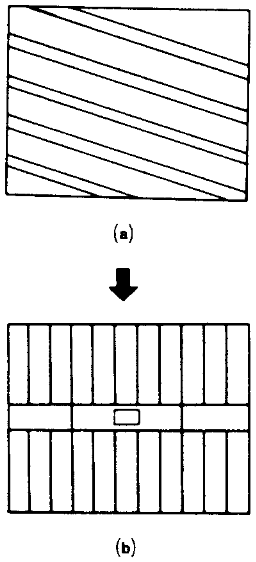

TV monitor
Vectorscope
AV output cable
Rear cover assy
Zoom switch (Remove from the lower case.)
Camera section
CPU PWB wire
①
W
T
⑨
⑧
⑤
AF adjusting hole
⑦
⑥
④
∞ or 2.0 ± 0.06 m
JACK board
VTR board
OPERATION UNIT
JUNCTION board
②
Subject
③
Upper cover assy
Cassette cover assy

Fig. 3-4-1 Connection for auto focus adjustment

3.4.2 Adjustment

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	Confirmation	• EE	• Subject in a distance of 50 m or more	• CN58 pin 3 (PHOTO TR IN) $\boxed{1}\boxed{5}$ AF		1) Turn off the power and shortcircuit pin 45 of IC3 to GND. 2) Turn on the power and shoot a subject in a distance of 50 m or more in the Rehearsal mode. 3) Confirm that voltage at pin 3 of CN58 is 2.22 ± 0.05 V. 4) Shoot a subject in a distance between 2 and 3 m by zooming from the TELE to WIDE positions and vice versa a few times in order to confirm that the picture is nearly in focus in every zooming position.
2A	Auto focus	• EE	• Subject in a distance of 50 m or more • ND filter(s) • ZOOM SW: TELE end • Focus: Manual	• CN58 pin 3 (PHOTO TR IN) $\boxed{1}\boxed{5}$ AF	• Infinite sensor	1) Turn off the power and shortcircuit pin 45 of IC3 to GND. 2) Turn on the power and shoot a subject in a distance of 50 m or more in the Rehearsal mode. 3) Attach ND filter(s) to the lens to open the iris fully. 4) Set the FOCUS button to MANUAL. 5) Set the ZOOM switch to the TELE end. 6) By operating the manual focus buttons (+ and –) to bring the subject into focus on the TV monitor. 7) Adjust the setscrew of the infinity sensor so that voltage at pin 3 of CN58 is 2.22 ± 0.05 V.
2B	Easy auto focusing	• EE	• Subject in a distance of 2.0 ± 0.06 m • ND filter(s) • ZOOM SW: TELE end • Focus: Manual	• CN58 pin 3 (PHOTO TR IN) $\boxed{1}\boxed{5}$ AF	• Infinite sensor	1) Turn off the power and shortcircuit pin 45 of IC3 to GND. 2) Turn on the power and shoot a subject in a distance of 2.0 m in the Rehearsal mode. 3) Attach ND filters to the lens to open the iris fully. 4) Set the FOCUS button to MANUAL. 5) Set the ZOOM switch to the TELE end. 6) By operating the manual focus buttons (+ and –) to bring the subject into tocus on the TV monitor. 7) Press the MANUAL FOCUS button (+) 30 times. 8) Adjust the setscrew of the infinity sensor so that voltage at pin 3 of CN58 is 2.22 ± 0.05 V.

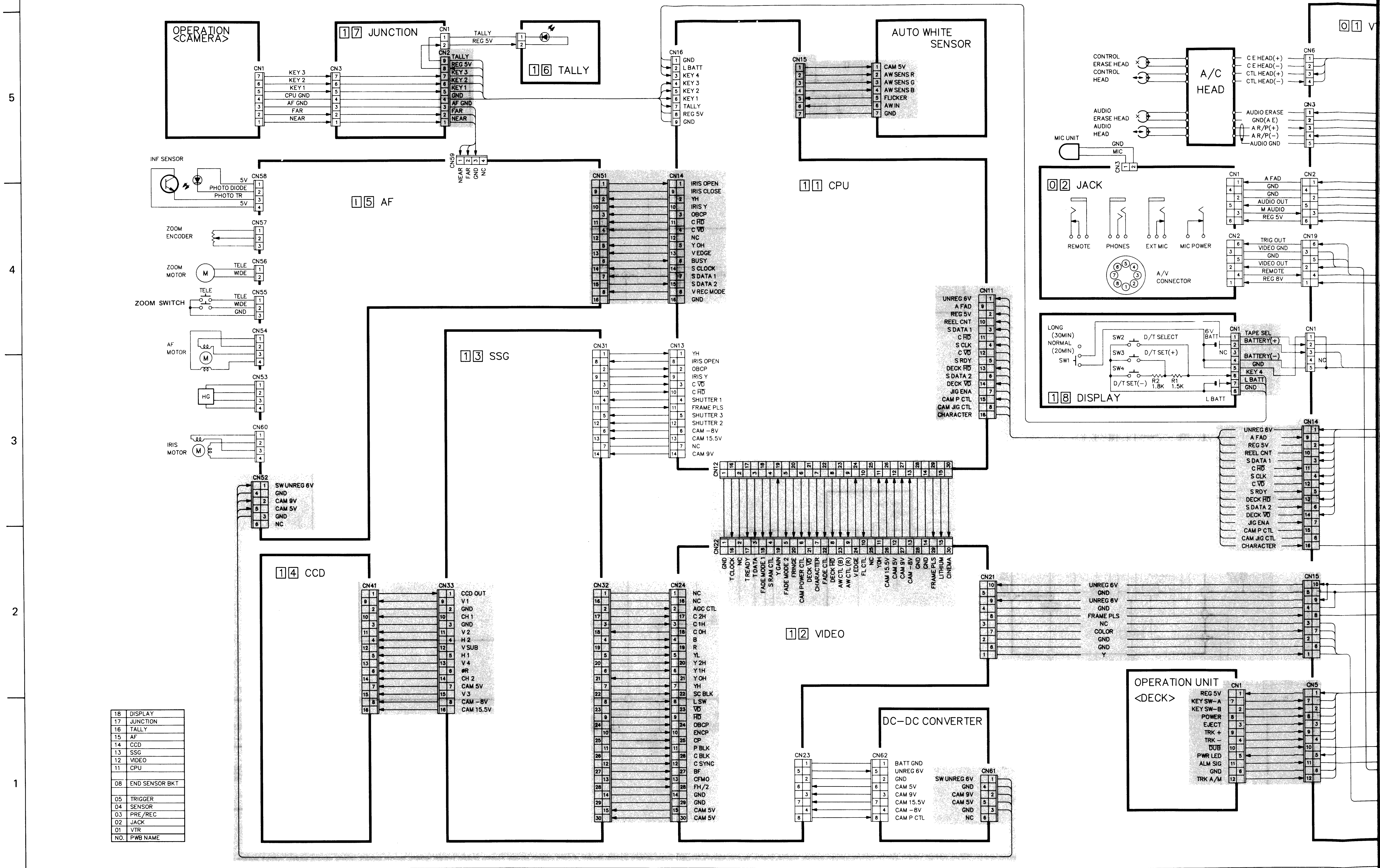
3.5 ELECTRONIC VIEWFINDER (E. VF) ADJUSTMENT

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	Horizontal sync.  Centering magnet VR04 FOCUS VR03 BBIGHT VR01 H.HOLD VR02 V.SIZE	• EE	• Gray scale	• E. VF	• VR01 (H. HOLD) $\boxed{5}\boxed{0}$ E.VF	1) Observing the viewfinder screen, turn VR01 fully clockwise to make the picture unstable. 2) Slowly return VR01 counterclockwise to find a point where the picture becomes stable, and mark this position. 3) Turn VR01 fully counterclockwise to make the picture unstable in the same manner as 1) above. 4) Slowly return VR01 clockwise until the picture becomes stable, and mark this position of VR01. 5) Finally set VR01 to the midpoint between the two markings of 2) and 4). 
2	Vertical scanning		• Gray scale	• E. VF	• VR02 (V. SIZE) $\boxed{5}\boxed{0}$ E.VF	1) Observing the viewfinder screen, adjust VR02 for normal picture amplitude.
3	Centering		• Gray scale	• E. VF	• Centering magnet	1) Shoot the gray scale to position it in the center of the TV monitor screen, and adjust the centering magnet to locate the gray scale in the center of the viewfinder screen.
4	Focus		• Gray scale	• E. VF	• VR04 (FOCUS) $\boxed{5}\boxed{0}$ E.VF	1) Observing the viewfinder screen, adjust VR04 so that the center image of the gray scale becomes sharp and clear.
5	Brightness		• Lens: Closed with lens cap	• E. VF	• VR03 (BRIGHT) $\boxed{5}\boxed{0}$ E.VF	1) Close the lens with the lens cap and adjust VR03 so that the raster of the CRT is just visible in the viewfinder.

SECTION

OVERALL WIRING AND BL

4.1 OVERALL WIRING

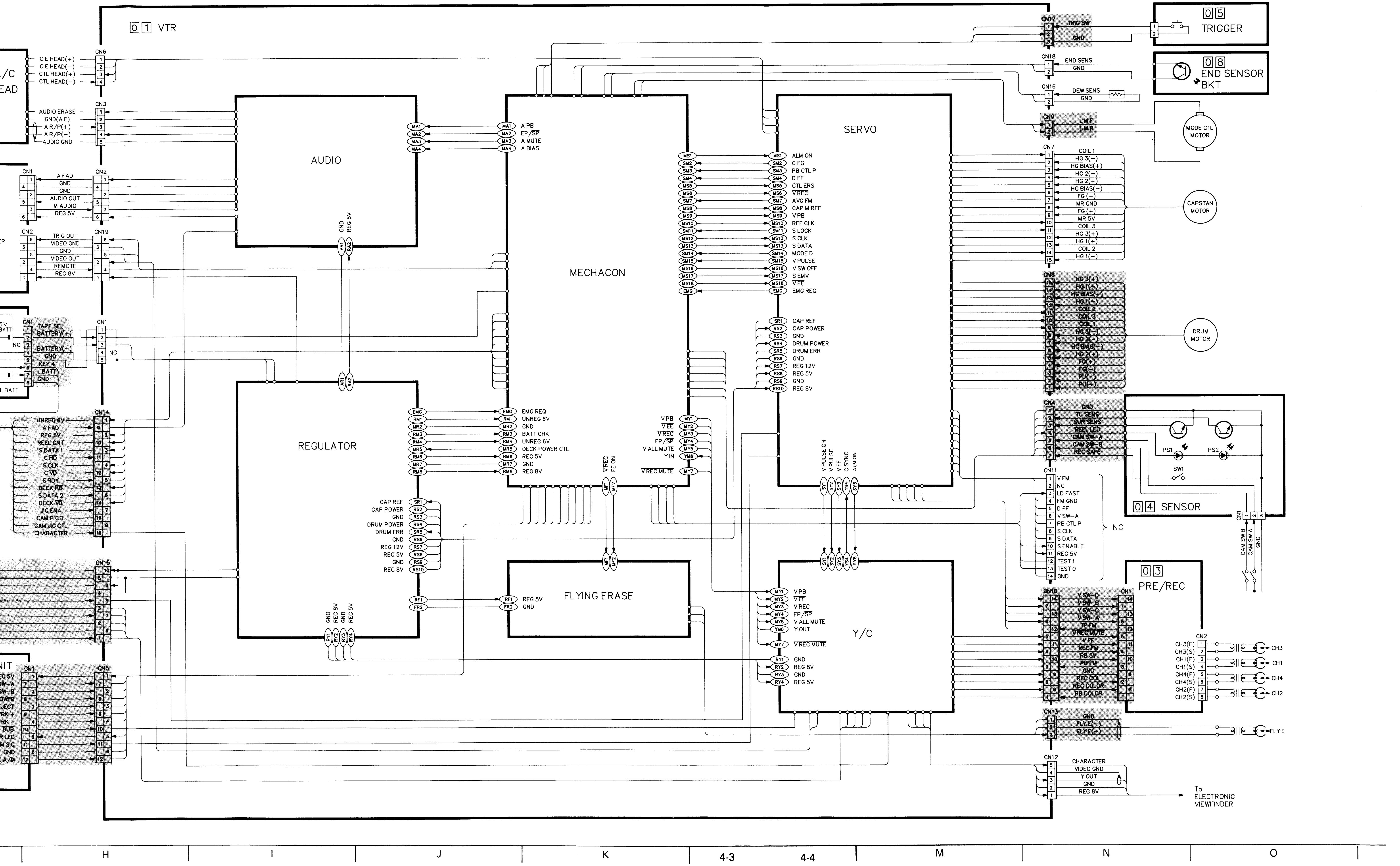


OPERATION <CAMERA>
17 JUNCTION
16 TALLY
AUTO WHITE SENSOR
11 CPU
15 AF
13 SSG
14 CCD
12 VIDEO
DC−DC CONVERTER
OPERATION UNIT <DECK>
01 VTR
A/C HEAD
MIC UNIT
02 JACK
18 DISPLAY
INF SENSOR
ZOOM ENCODER
ZOOM MOTOR
ZOOM SWITCH
AF MOTOR
HG
IRIS MOTOR
REMOTE
PHONES
EXT MIC
MIC POWER
A/V CONNECTOR
CONTROL ERASE HEAD
CONTROL HEAD
AUDIO ERASE HEAD
AUDIO HEAD
CN1
CN2
CN3
CN6
CN11
CN12
CN13
CN14
CN15
CN16
CN19
CN21
CN22
CN23
CN24
CN31
CN32
CN33
CN41
CN51
CN52
CN53
CN54
CN55
CN56
CN57
CN58
CN59
CN60
CN61
CN62
CN5
A
B
C
E
F
G
H
1
2
3
4
5
6

NO.	PWB NAME
18	DISPLAY
17	JUNCTION
16	TALLY
15	AF
14	CCD
13	SSG
12	VIDEO
11	CPU
08	END SENSOR BKT
05	TRIGGER
04	SENSOR
03	PRE/REC
02	JACK
01	VTR

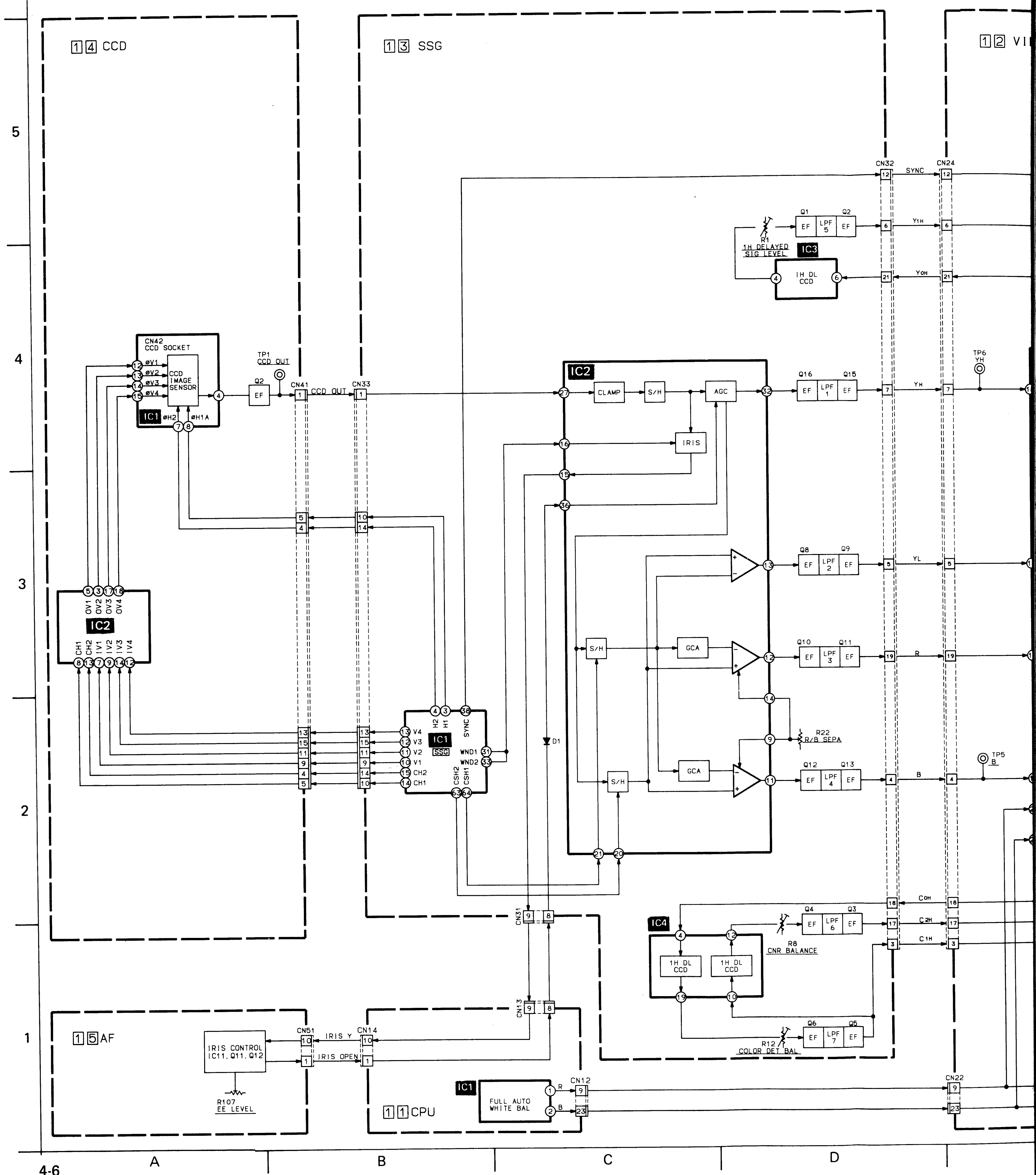
SECTION 4
L WIRING AND BLOCK DIAGRAMS

Patchcords
Patchcords are available for blue shaded portions of the overall wiring.



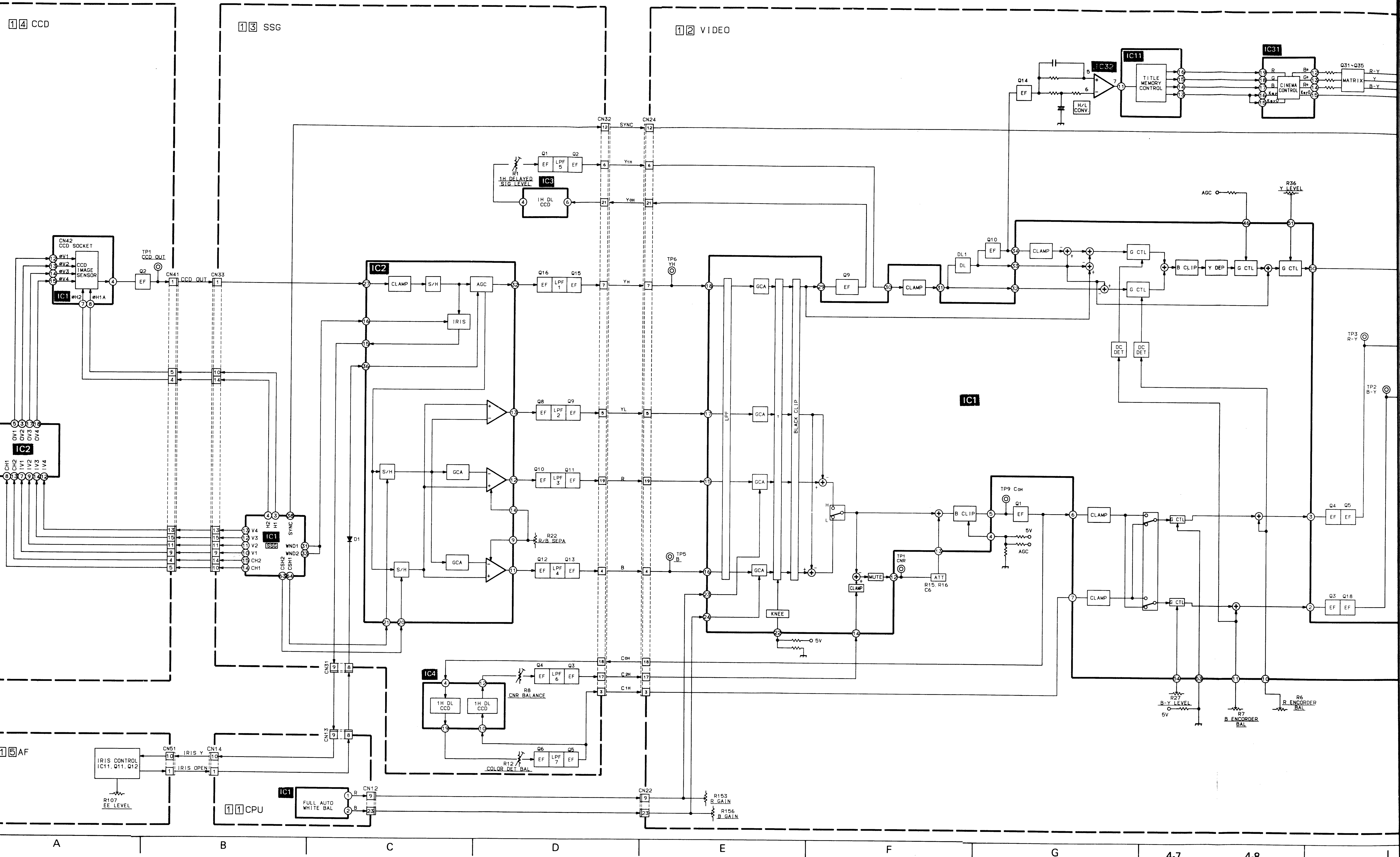
01 VTR
05 TRIGGER
08 END SENSOR BKT
04 SENSOR
03 PRE/REC
/C
EAD
CE HEAD(+)
CE HEAD(−)
CTL HEAD(+)
CTL HEAD(−)
AUDIO ERASE
GND(A E)
A R/P(+)
A R/P(−)
AUDIO GND
CN6
CN3
CN1
CN2
A FAD
GND
AUDIO OUT
M AUDIO
REG 5V
CN19
TRIG OUT
VIDEO GND
VIDEO OUT
REMOTE
REG 8V
TAPE SEL
BATTERY(+)
BATTERY(−)
KEY 4
L BATT
NC
CN14
UNREG 6V
REEL CNT
S DATA 1
C HD
S CLK
C VD
S RDY
DECK HD
S DATA 2
DECK VD
JIG ENA
CAM P CTL
CAM JIG CTL
CHARACTER
CN15
CN5
NIT
AUDIO
MECHACON
SERVO
REGULATOR
FLYING ERASE
Y/C
A PB
EP/SP
A MUTE
A BIAS
MA1
MA2
MA3
MA4
AR1
RA2
ALM ON
C FG
PB CTL P
D FF
CTL ERS
V REC
AVG FM
CAP M REF
V PB
REF CLK
S LOCK
S CLK
S DATA
MODE D
V PULSE
V SW OFF
S EMV
V EE
EMG REQ
CAP REF
CAP POWER
DRUM POWER
DRUM ERR
REG 12V
REG 8V
UNREG 6V
BATT CHK
DECK POWER CTL
V ALL MUTE
Y IN
V REC MUTE
FE ON
MF1
MF2
RF1
FR2
RY1
RY2
RY3
RY4
SY1
SY2
SY3
SY4
SY6
V PULSE ON
V FF
C SYNC
Y OUT
CN17
TRIG SW
CN18
END SENS
CN16
DEW SENS
CN9
LMF
LMR
MODE CTL MOTOR
CN7
COIL 1
HG 3(−)
HG BIAS(+)
HG 2(−)
HG 2(+)
HG BIAS(−)
FG(−)
MR GND
FG(+)
MR 5V
COIL 3
HG 3(+)
HG 1(+)
COIL 2
HG 1(−)
CAPSTAN MOTOR
CN8
PU(−)
PU(+)
DRUM MOTOR
CN4
TU SENS
SUP SENS
REEL LED
CAM SW-A
CAM SW-B
REC SAFE
PS1
PS2
SW1
CN11
V FM
LD FAST
FM GND
V SW-A
PB CTL P
S ENABLE
TEST 1
TEST 0
NC
CAM SW B
CAM SW A
CN10
V SW-D
V SW-B
V SW-C
V SW-A
TP FM
V REC MUTE
V FF
REC FM
PB 5V
PB FM
REC COL
REC COLOR
PB COLOR
CN2
CH3(F)
CH3(S)
CH1(F)
CH1(S)
CH4(F)
CH4(S)
CH2(F)
CH2(S)
CH3
CH1
CH4
CH2
CN13
FLY E(−)
FLY E(+)
FLYE
CN12
VIDEO GND
To ELECTRONIC VIEWFINDER
H
I
J
K
M
N
O

4.2 CAMERA BLOCK DIAGRAM

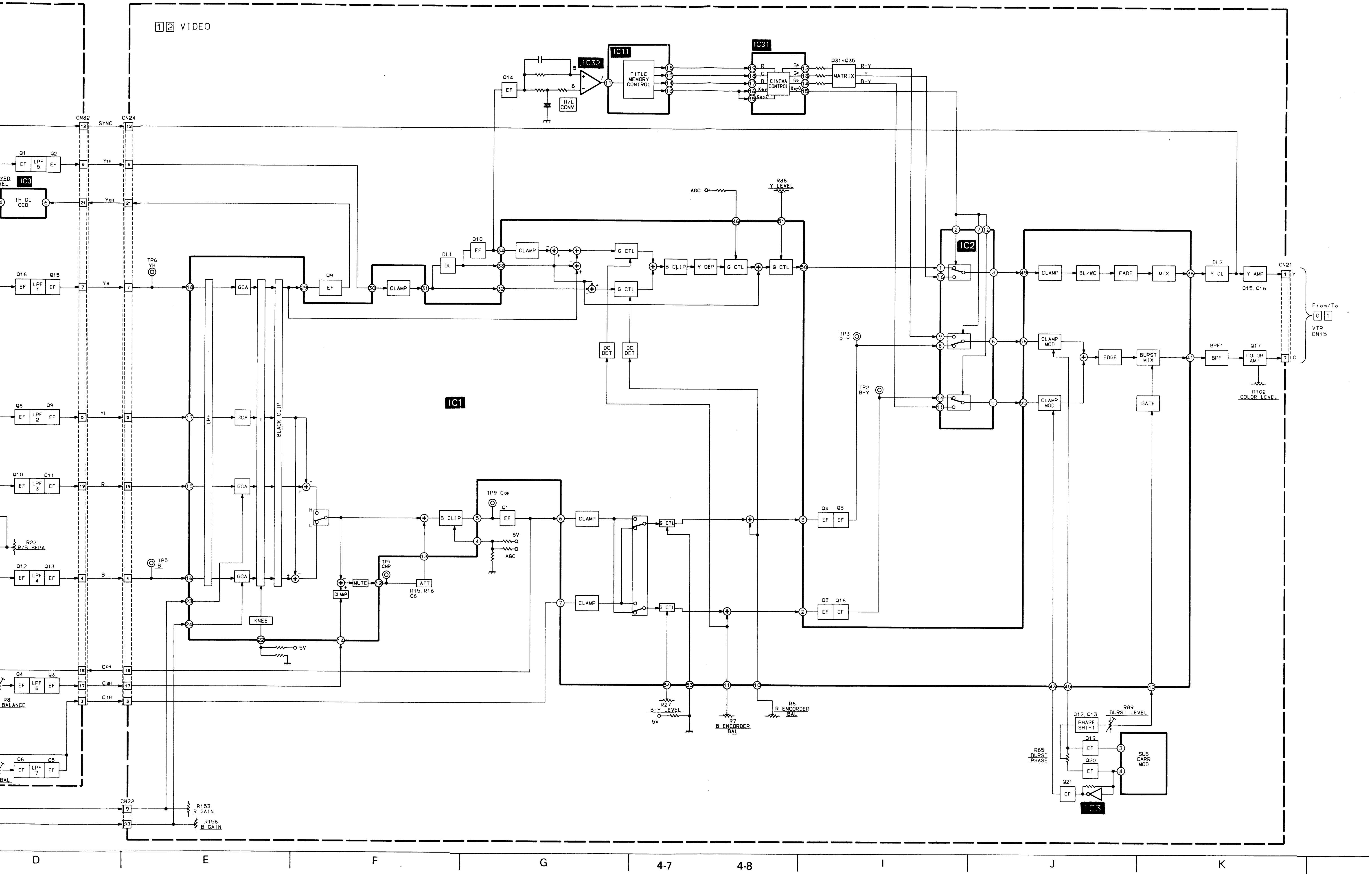


14 CCD
13 SSG
12 VI
15 AF
11 CPU
CN42 CCD SOCKET
CCD IMAGE SENSOR
IC1
øV1
øV2
øV3
øV4
øH2
øH1A
TP1 CCD OUT
Q2
EF
CN41
CN33
CCD OUT
IC2
OV1 OV2 OV3 OV4
CH1 CH2 IV1 IV2 IV3 IV4
IC1 SSG
V4 V3 V2 V1 CH2 CH1
H2 H1 SYNC
WND1 WND2
CSH2 CSH1
CLAMP
S/H
AGC
IRIS
GCA
D1
R22 R/B SEPA
CN32
CN24
SYNC
Q1 Q2 EF LPF 5 EF
R1 1H DELAYED SIG LEVEL
IC3
1H DL CCD
Y1H
Y0H
TP6 YH
Q16 Q15 EF LPF 1 EF
YH
Q8 Q9 EF LPF 2 EF
YL
Q10 Q11 EF LPF 3 EF
R
TP5 B
Q12 Q13 EF LPF 4 EF
B
CN31
CN13
IC4
1H DL CCD
Q4 Q3 EF LPF 6 EF
R8 CNR BALANCE
C0H
C2H
C1H
Q6 Q5 EF LPF 7 EF
R12 COLOR DET BAL
CN51
CN14
IRIS Y
IRIS OPEN
IRIS CONTROL IC11, Q11, Q12
R107 EE LEVEL
IC1
FULL AUTO WHITE BAL
CN12
CN22
A
B
C
D
1
2
3
4
5
6

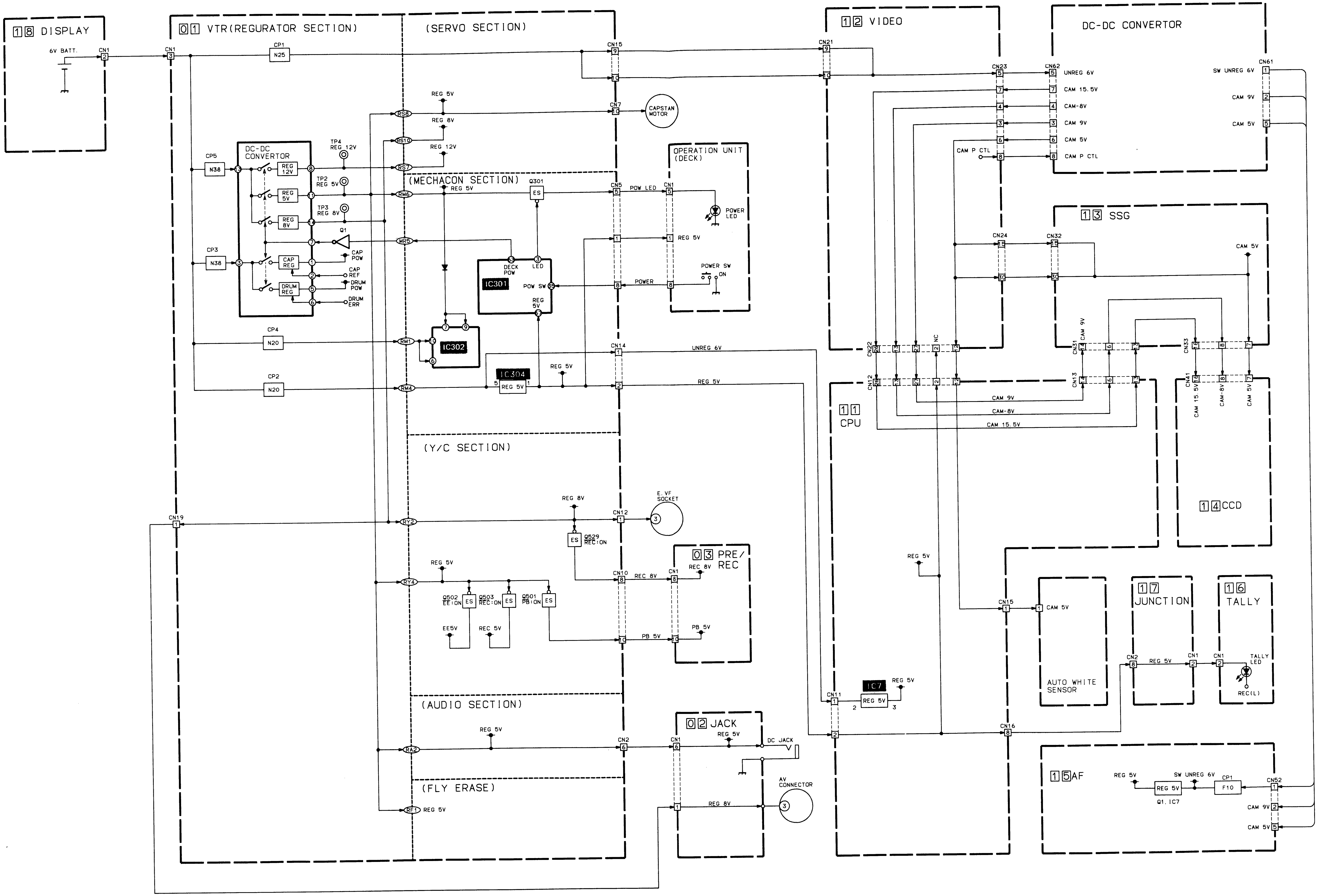
4.2 CAMERA BLOCK DIAGRAM



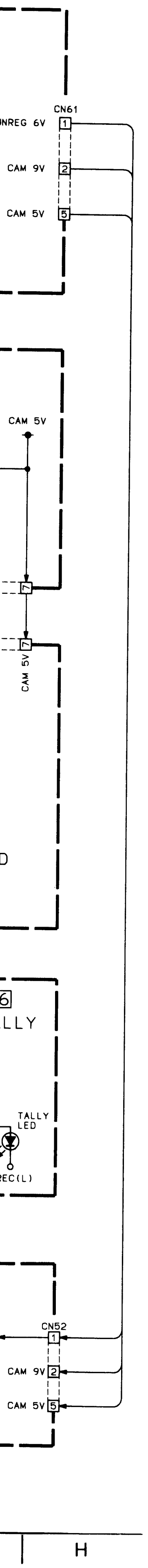
14 CCD
13 SSG
12 VIDEO
15 AF
11 CPU
CN42 CCD SOCKET
CCD IMAGE SENSOR
IC1
øV1
øV2
øV3
øV4
øH2
øH1A
Q2
EF
TP1 CCD OUT
CN41
CCD OUT
CN33
IC2
OV1 OV2 OV3 OV4
CH1 CH2 IV1 IV2 IV3 IV4
IC1 SSG
V4 V3 V2 V1 CH2 CH1
H2 H1 SYNC
WND1 WND2
CSH2 CSH1
CLAMP
S/H
AGC
IRIS
GCA
R22 R/B SEPA
D1
CN32
CN24
SYNC
Q1 EF LPF 5 Q2 EF
R1 1H DELAYED SIG LEVEL
IC3
1H DL CCD
YH
YOH
Q16 EF LPF 1 Q15 EF
Q8 EF LPF 2 Q9 EF
YL
Q10 EF LPF 3 Q11 EF
R
Q12 EF LPF 4 Q13 EF
B
TP6 YH
TP5 B
CN31
CN13
IC4
1H DL CCD
Q4 EF LPF 6 Q3 EF
R8 CNR BALANCE
Q6 EF LPF 7 Q5 EF
R12 COLOR DET BAL
COH
C2H
C1H
IRIS CONTROL IC11, Q11, Q12
R107 EE LEVEL
CN51
CN14
IRIS Y
IRIS OPEN
FULL AUTO WHITE BAL
CN12
CN22
R153 R GAIN
R156 B GAIN
LPF
BLACK CLIP
KNEE
5V
Q9 EF
CLAMP
DL1 DL
Q10 EF
Q14 EF
IC32
H/L CONV
IC11
TITLE MEMORY CONTROL
IC31
CINEMA CONTROL
MATRIX
Q31~Q35
R-Y
Y
B-Y
AGC
R36 Y LEVEL
G CTL
B CLIP
Y DEP
DC DET
TP3 R-Y
TP2 B-Y
TP9 COH
Q1 EF
AGC
TP1 CNR
MUTE
ATT
R15, R16 C6
Q4 EF Q5 EF
Q3 EF Q18 EF
R27 B-Y LEVEL
R7 B ENCORDER BAL
R6 R ENCORDER BAL
A
B
C
D
E
F
G
I


12 VIDEO
IC32
IC11
TITLE MEMORY CONTROL
IC31
CINEMA CONTROL
Q31~Q35
MATRIX
R-Y
Y
B-Y
Q14
EF
H/L CONV.
CN32
CN24
SYNC
Q1
LPF 5
Q2
EF
YH
IC3
1H DL CCD
YOH
Q16
LPF 1
Q15
TP6 YH
Q8
LPF 2
Q9
YL
Q10
LPF 3
Q11
R
R22 R/B SEPA
TP5 B
Q12
LPF 4
Q13
B
Q4
LPF 6
Q3
COH
C2H
C1H
R8 BALANCE
Q6
LPF 7
Q5
BAL
CN22
R153 R GAIN
R156 B GAIN
LPF
GCA
BLACK CLIP
KNEE
5V
Q9
EF
CLAMP
DL1
DL
Q10
CLAMP
G CTL
AGC
R36 Y LEVEL
B CLIP
Y DEP
DC DET
IC1
H
L
B CLIP
TP9 COH
Q1
EF
5V
AGC
TP1 CNR
MUTE
ATT
R15, R16 C6
CLAMP
R27 B-Y LEVEL
R7 B ENCORDER BAL
R6 R ENCORDER BAL
TP3 R-Y
TP2 B-Y
Q4
Q5
Q3
Q18
IC2
BL/WC
FADE
MIX
CLAMP MOD
EDGE
BURST MIX
GATE
DL2
Y DL
Y AMP
Q15, Q16
BPF1
BPF
Q17
COLOR AMP
R102 COLOR LEVEL
CN21
From/To
01
VTR CN15
Q12, Q13
PHASE SHIFT
R89 BURST LEVEL
R85 BURST PHASE
Q19
Q20
Q21
SUB CARR MOD
IC3
D
E
F
G
I
J
K

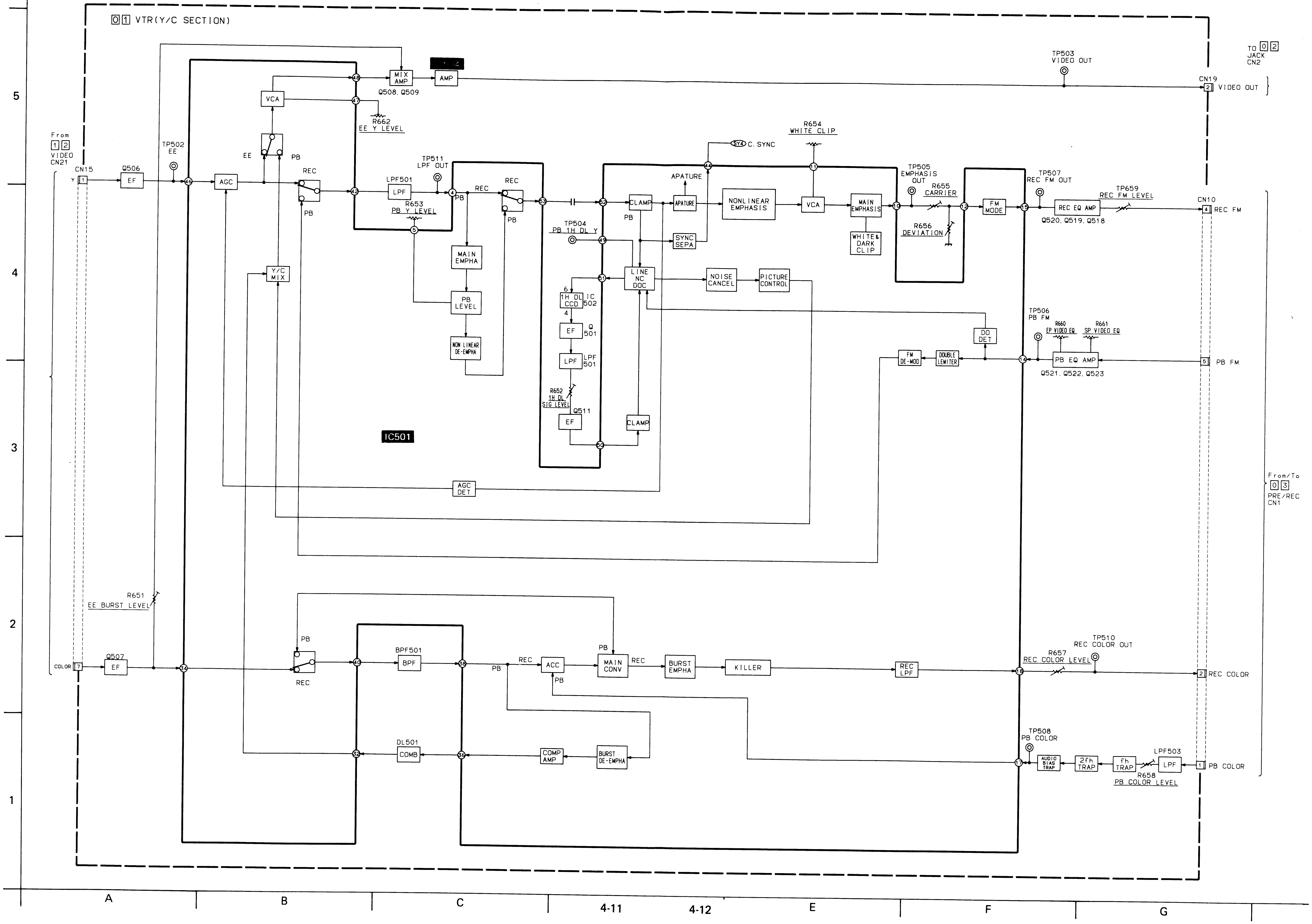
4.3 POWER SYSTEM BLOCK DIAGRAM



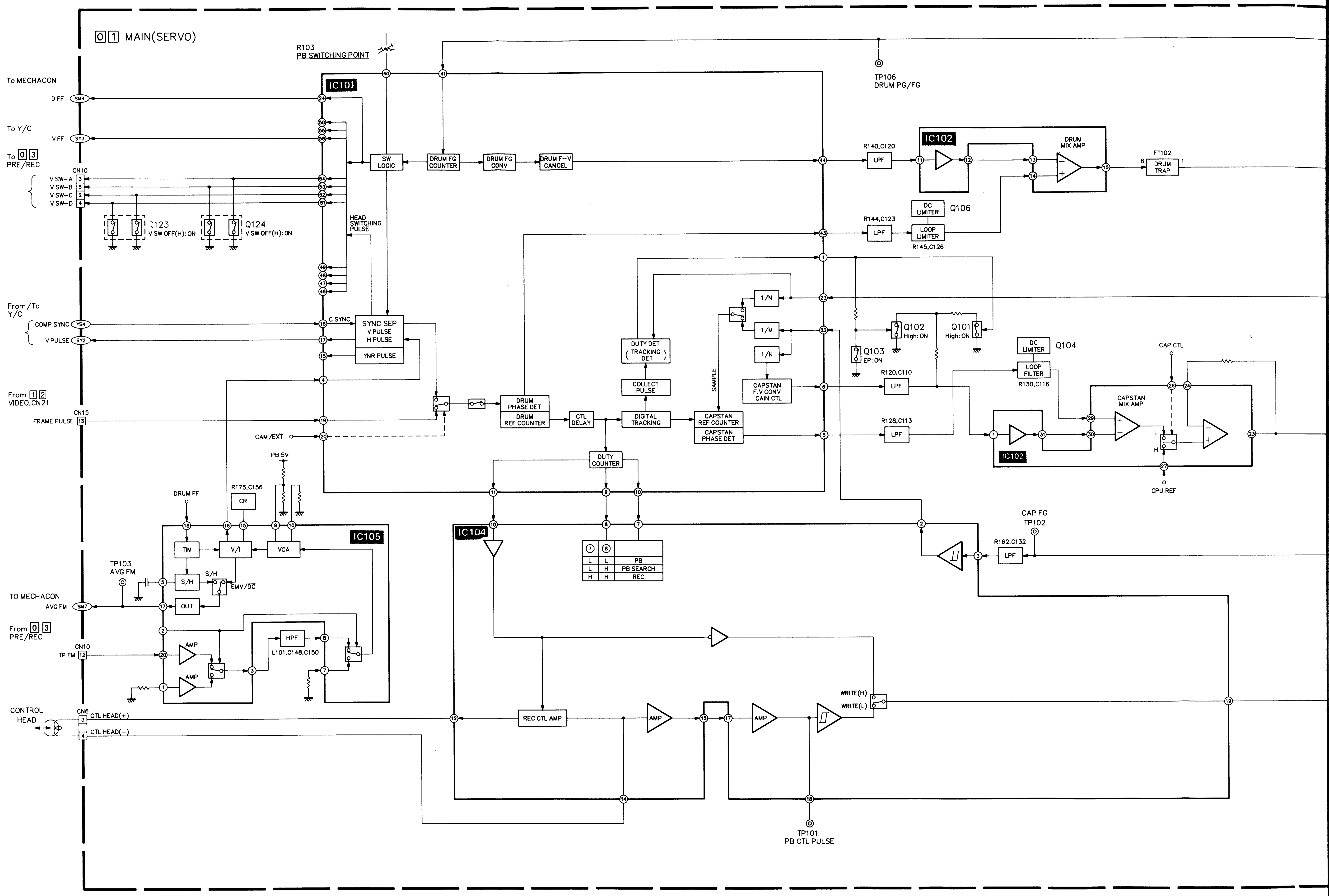
18 DISPLAY
6V BATT.
CN1
01 VTR(REGURATOR SECTION)
(SERVO SECTION)
CP1
N25
CN15
REG 5V
REG 8V
REG 12V
RS8
RS10
RS7
CN7
CAPSTAN MOTOR
CP5
N38
DC-DC CONVERTOR
REG 12V
REG 5V
REG 8V
TP4 REG 12V
TP2 REG 5V
TP3 REG 8V
Q1
CAP POW
CAP REF
DRUM POW
DRUM ERR
CP3
N38
CAP REG
DRUM REG
(MECHACON SECTION)
Q301
ES
RM6
MR5
DECK POW
LED
IC301
POW SW
REG 5V
CN5
POW LED
OPERATION UNIT (DECK)
POWER LED
POWER SW
ON
POWER
CP4
N20
RM1
IC302
CN14
UNREG 6V
CP2
N20
RM4
IC304
REG 5V
(Y/C SECTION)
CN19
RY2
REG 8V
Q529 REC:ON
CN12
E.VF SOCKET
RY4
Q502 EE:ON
Q503 REC:ON
Q501 PB:ON
EE5V
REC 5V
CN10
REC 8V
PB 5V
03 PRE/REC
(AUDIO SECTION)
RA2
CN2
02 JACK
DC JACK
AV CONNECTOR
(FLY ERASE)
RF1
REG 8V
12 VIDEO
CN21
CN23
CAM P CTL
CN22
CN24
CN12
NC
DC-DC CONVERTOR
CN62
UNREG 6V
CAM 15.5V
CAM-8V
CAM 9V
CAM 5V
CAM P CTL
CN61
SW UNREG 6V
13 SSG
CN32
CN31
CN33
CN13
CN41
CAM 9V
CAM-8V
CAM 15.5V
11 CPU
14 CCD
IC7
CN11
CN15
CN16
AUTO WHITE SENSOR
17 JUNCTION
16 TALLY
TALLY LED
REC(L)
15 AF
Q1, IC7
CP1
F10
CN52

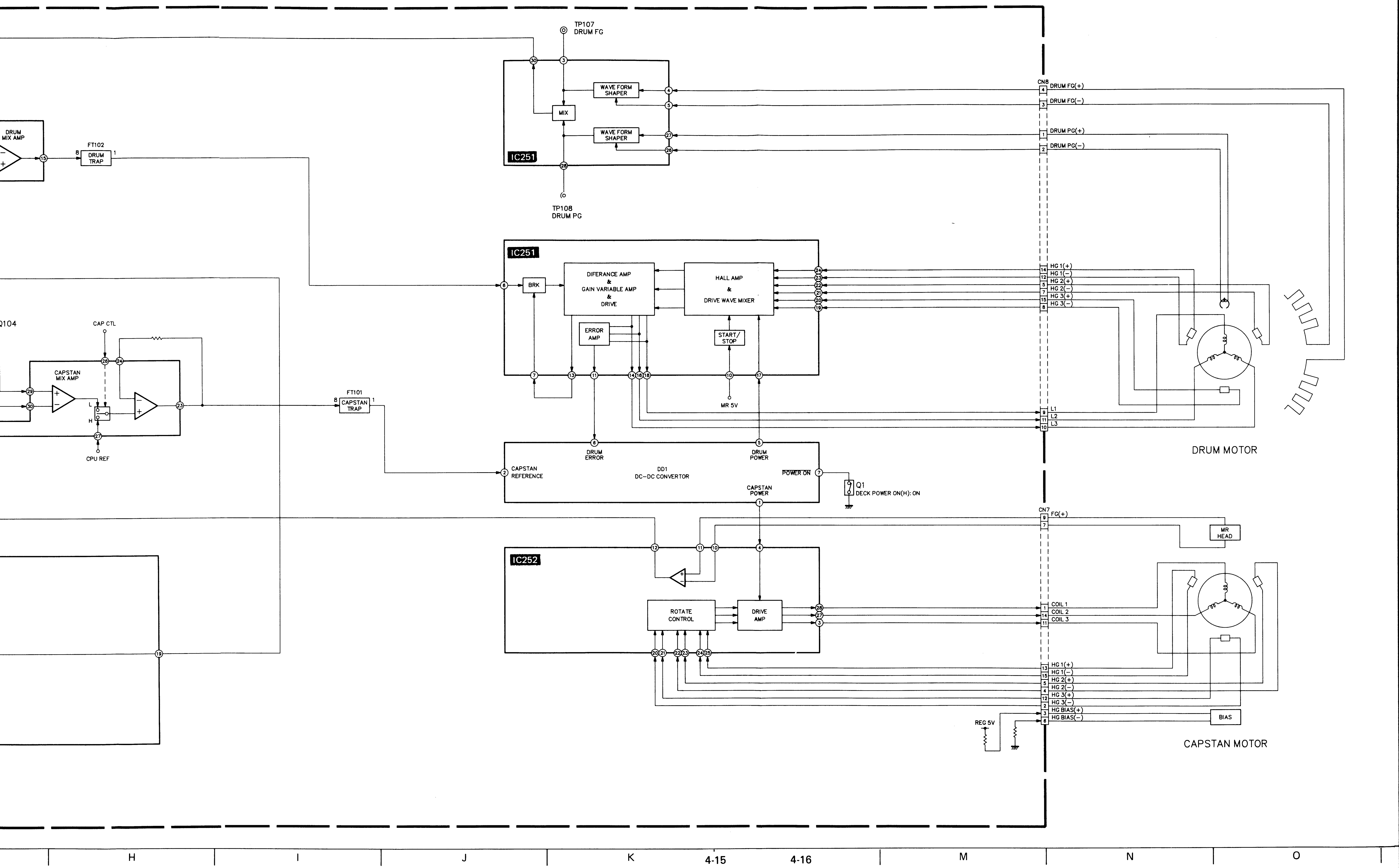

CN61
UNREG 6V
CAM 9V
CAM 5V
CAM 5V
CAM 5V
6
LLY
TALLY LED
REC(L)
CN52
CAM 9V
CAM 5V
H

4.4 Y/C BLOCK DIAGRAM


6
5
4
3
2
1
01 VTR(Y/C SECTION)
From 12 VIDEO CN21
CN15
Y 1
COLOR 7
Q506
EF
Q507
EF
TP502 EE
AGC
EE
PB
REC
VCA
MIX AMP
Q508, Q509
[redacted]
AMP
R662 EE Y LEVEL
Y/C MIX
TP511 LPF OUT
LPF501
LPF
R653 PB Y LEVEL
REC
PB
MAIN EMPHA
PB LEVEL
NON LINEAR DE-EMPHA
C. SYNC
APATURE
CLAMP
APATURE
SYNC SEPA
NONLINEAR EMPHASIS
R654 WHITE CLIP
VCA
MAIN EMPHASIS
WHITE& DARK CLIP
TP504 PB 1H DL Y
1H DL CCD
IC 502
EF
Q 501
LPF
LPF 501
R652 1H DL SIG LEVEL
Q511
EF
CLAMP
LINE NC DOC
NOISE CANCEL
PICTURE CONTROL
IC501
AGC DET
DO DET
TP505 EMPHASIS OUT
R655 CARRIER
R656 DEVIATION
TP507 REC FM OUT
FM MODE
REC EQ AMP
Q520, Q519, Q518
TP659 REC FM LEVEL
TP503 VIDEO OUT
CN19
2 VIDEO OUT
TO 02 JACK CN2
CN10
4 REC FM
TP506 PB FM
R660 EP VIDEO EQ
R661 SP VIDEO EQ
PB EQ AMP
Q521, Q522, Q523
FM DE-MOD
DOUBLE LEMITER
5 PB FM
From/To 03 PRE/REC CN1
R651 EE BURST LEVEL
PB
REC
BPF501
BPF
PB
REC
ACC
PB
MAIN CONV
REC
BURST EMPHA
KILLER
REC LPF
R657 REC COLOR LEVEL
TP510 REC COLOR OUT
2 REC COLOR
DL501
COMB
COMP AMP
BURST DE-EMPHA
TP508 PB COLOR
AUDIO BIAS TRAP
2fh TRAP
fh TRAP
R658 PB COLOR LEVEL
LPF503
LPF
1 PB COLOR
A
B
C
E
F
G

4.5 SERVO BLOCK DIAGRAM

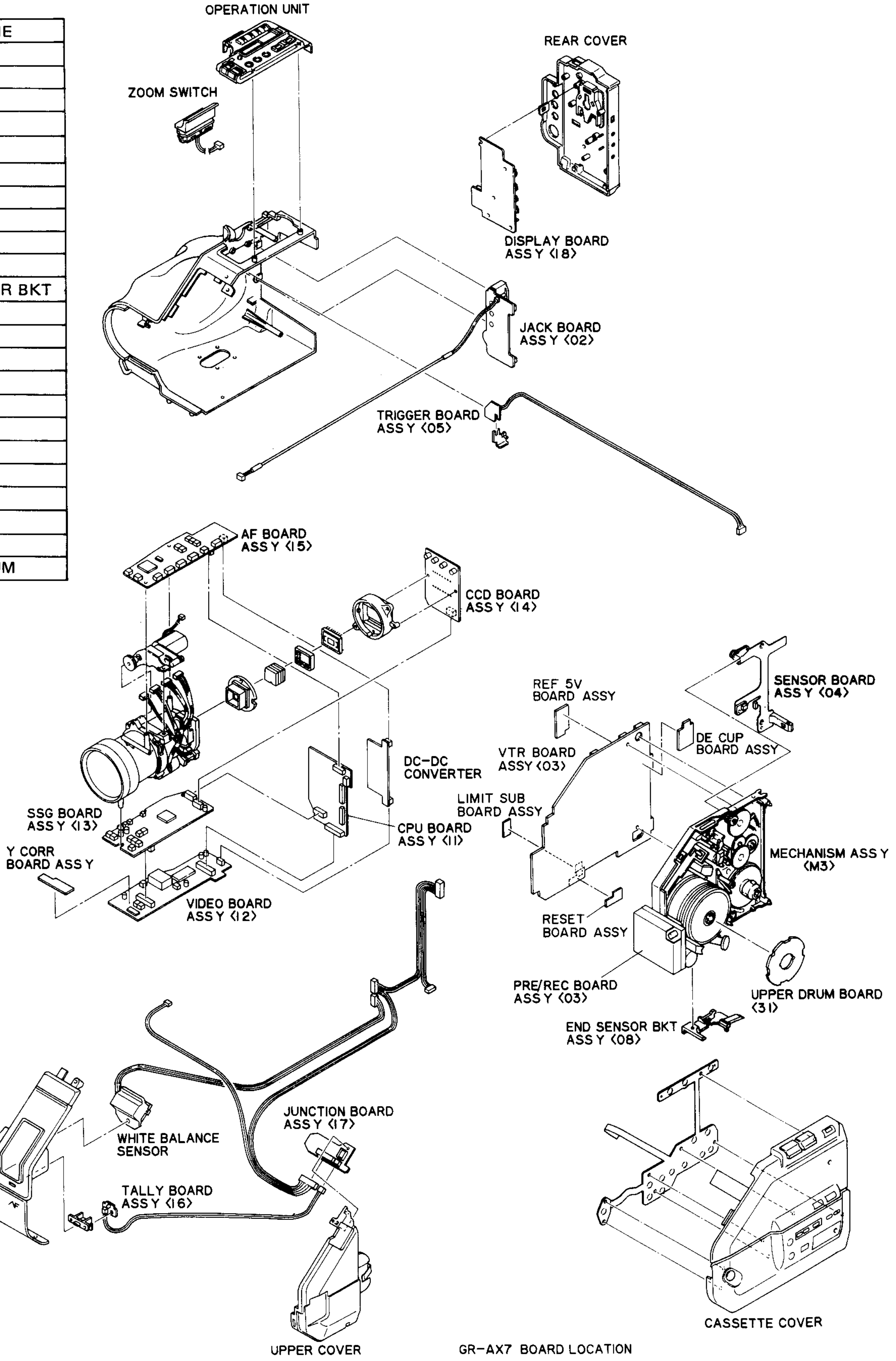

01 MAIN(SERVO)
R103
PB SWITCHING POINT
IC101
To MECHACON
D FF
SM4
To Y/C
V FF
SY3
To 03
PRE/REC
CN10
V SW-A 3
V SW-B 5
V SW-C 2
V SW-D 4
Q123
V SW OFF(H): ON
Q124
V SW OFF(H): ON
SW LOGIC
HEAD SWITCHING PULSE
DRUM FG COUNTER
DRUM FG CONV
DRUM F-V CANCEL
From/To Y/C
COMP SYNC
YS4
V PULSE
SY2
C SYNC
SYNC SEP
V PULSE
H PULSE
YNR PULSE
From 12
VIDEO,CN21
CN15
FRAME PULSE 13
CAM/EXT
DRUM PHASE DET
DRUM REF COUNTER
CTL DELAY
DIGITAL TRACKING
DUTY DET
(TRACKING DET)
COLLECT PULSE
DUTY COUNTER
SAMPLE
CAPSTAN REF COUNTER
CAPSTAN PHASE DET
1/N
1/M
1/N
CAPSTAN F.V CONV CAIN CTL
TP106
DRUM PG/FG
IC102
R140,C120
LPF
DRUM MIX AMP
FT102
8
DRUM TRAP
1
R144,C123
LPF
DC LIMITER
Q106
LOOP LIMITER
R145,C126
Q102
High: ON
Q101
High: ON
Q103
EP: ON
DC LIMITER
Q104
LOOP FILTER
R130,C116
R120,C110
LPF
R128,C113
LPF
CAP CTL
CAPSTAN MIX AMP
IC102
L
H
CPU REF
PB 5V
R175,C156
CR
DRUM FF
IC105
TIM
V/I
VCA
S/H
S/H
EMV/DC
OUT
TP103
AVG FM
TO MECHACON
AVG FM
SM7
From 03
PRE/REC
CN10
TP FM 12
AMP
AMP
HPF
L101,C148,C150
IC104
⑦ ⑧
L L PB
L H PB SEARCH
H H REC
CAP FG
TP102
R162,C132
LPF
CONTROL HEAD
CN6
3 CTL HEAD(+)
4 CTL HEAD(-)
REC CTL AMP
AMP
AMP
WRITE(H)
WRITE(L)
TP101
PB CTL PULSE


TP107
DRUM FG
WAVE FORM SHAPER
MIX
WAVE FORM SHAPER
IC251
TP108
DRUM PG
DRUM MIX AMP
FT102
DRUM TRAP
CN8
DRUM FG(+)
DRUM FG(−)
DRUM PG(+)
DRUM PG(−)
IC251
BRK
DIFERANCE AMP & GAIN VARIABLE AMP & DRIVE
HALL AMP & DRIVE WAVE MIXER
ERROR AMP
START/STOP
MR 5V
HG 1(+)
HG 1(−)
HG 2(+)
HG 2(−)
HG 3(+)
HG 3(−)
L1
L2
L3
DRUM MOTOR
Q104
CAP CTL
CAPSTAN MIX AMP
CPU REF
FT101
CAPSTAN TRAP
DRUM ERROR
DRUM POWER
CAPSTAN REFERENCE
DD1
DC−DC CONVERTOR
POWER ON
CAPSTAN POWER
Q1
DECK POWER ON(H): ON
CN7
FG(+)
MR HEAD
IC252
ROTATE CONTROL
DRIVE AMP
COIL 1
COIL 2
COIL 3
HG 1(+)
HG 1(−)
HG 2(+)
HG 2(−)
HG 3(+)
HG 3(−)
HG BIAS(+)
HG BIAS(−)
REG 5V
BIAS
CAPSTAN MOTOR
H
I
J
K
M
N
O

SECTION 5
DIAGRAMS AND CIRCUIT BOARDS

5.1 CIRCUIT BOARD LOCATIONS

No.	PWB NAME
01	VTR
	REF 5V
	DE CUP
	LIMIT SUB
	RESET
02	JACK
03	PRE/REC
04	SENSOR
05	TRIGGER
08	END SENSOR BKT
11	CPU
12	VIDEO
	Y CORR
13	SSG
14	CCD
15	AF
16	TALLY
17	JUNCTION
18	DISPLAY
40	UPPER DRUM


OPERATION UNIT
REAR COVER
ZOOM SWITCH
DISPLAY BOARD ASSY ‹18›
JACK BOARD ASSY ‹02›
TRIGGER BOARD ASSY ‹05›
AF BOARD ASSY ‹15›
CCD BOARD ASSY ‹14›
SENSOR BOARD ASSY ‹04›
REF 5V BOARD ASSY
DE CUP BOARD ASSY
VTR BOARD ASSY ‹03›
DC-DC CONVERTER
LIMIT SUB BOARD ASSY
SSG BOARD ASSY ‹13›
CPU BOARD ASSY ‹11›
MECHANISM ASSY ‹M3›
Y CORR BOARD ASSY
VIDEO BOARD ASSY ‹12›
RESET BOARD ASSY
PRE/REC BOARD ASSY ‹03›
UPPER DRUM BOARD ‹31›
END SENSOR BKT ASSY ‹08›
JUNCTION BOARD ASSY ‹17›
WHITE BALANCE SENSOR
TALLY BOARD ASSY ‹16›
CASSETTE COVER
UPPER COVER

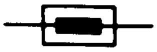
GR-AX7 BOARD LOCATION

5.2 SCHEMATIC DIAGRAM NOTES

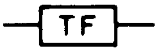
1. ▨ parts are safety related parts. When replacing them, be sure to use the specified parts.
2. Unit indications

No units: [Ω]	No units: [μF]	No units: [μH]
K: [kΩ]	P: [pF]	m: [mH]
M: [MΩ]		

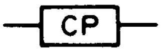
Thermistor



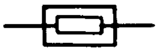
Thermal Fuse

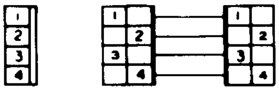


Circuit Protector

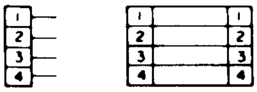


Posistor

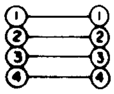




: Connector



: Board in connector

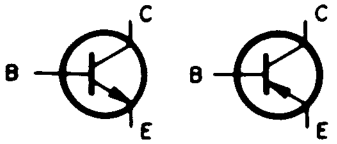


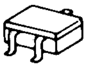
: Direct connection

COUNT UP : Active only at high.
$\overline{\text{COUNT DOWN}}$: Active only at low.

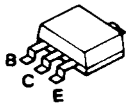
(VS) : Connected pattern in the board.
(MS) Abbreviations
(SM) V : Video M : Mechacon
S : Servo A : Audio
VS : Signal flow from video to servo.

3. Chip transistor



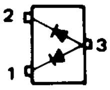


(Standard type)

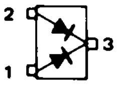


4. Chip diode

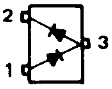
DAP202U
MA141WA

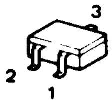


DAN202U
MA141WK

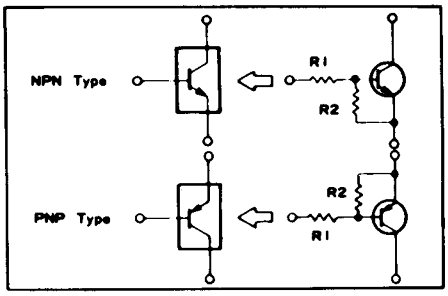


MA143
DA204U





5. Digital transistor



RESISTOR VALUES

JUNCTION	Part No.	R1 (kΩ)	R2 (kΩ)
PNP	DTA124EU	22	22
NPN	DTC144EU	47	47
	DTC124EU	22	22

Note: The digital transistor includes built in resistors.
It features small size and high reliability.
Both PNP and NPN types are available.
USES: INVERTER, INTERFACE, DRIVER CIRCUITS.

6. Definition of the surface and the back of circuit board diagrams

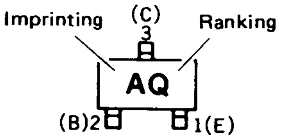
Front : Side on which discrete parts are assembled
Rear : Side on which chip parts are assembled

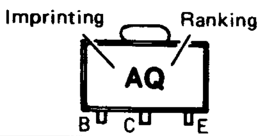
5.3 REPLACING SUBMINIATURE "CHIP" PARTS

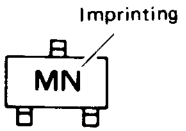
1. Some resistors, shorting jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
2. Additional compactness is achieved by using subminiature chip parts for certain circuit elements. When replacing these parts, note the cautions outlined below.
3. Chip transistors and diodes used in this model are outlined bellow.
4. Refer to parts list for correct part numbers.

- **Chip transistor and chip diode imprinting**

Transistors				Diodes	
Type	**Imprinting**	**Type**	**Imprinting**	**Type**	**Imprinting**
DTA124EU	15	2SB798	DM, DL, DK	DAN202U	N
DTA144EU	16	2SC2412K(S)	BS	DAP202K	P
DTC124EU	25	2SC3931	UB~UD	DAP202U	P
DTC124XU	45	2SC3936(BC)	KB, KC	DA204U	K
DTC144EU	26	2SC4081	BQ~BS	FMN1	N1
FMC2	C2	2SC4097(QR)	CQ, CR	IMN10	N10
FMG1	G1	2SC4098(PQ)	AP, AQ	MA141WA	MN
FMG2	G2	2SC4099(NP)	JN, JP	MA141WK	MT
FMQ1	Q1	2SC4176	B33, B34, B35	MA143	MC
FMS2	S2	2SC4177(56)	L5, L6	MA3075H	7.5H
FMU1	U1	2SC4178(34)	F13, F14	MA704	MIK
FMW1	W1	2SC4181	L17, L18	MA714	MIP
FMW3	W3	2SD1819	YR~YS	MA716	M1U
FMY1	Y1	2SJ146	4D	RB451F	3C
2SA1036K(QR)	HQ~HR	2SK198P,Q	10P, 10Q	RD7.5M-T1B2	752
2SA1532(BC)	EB, EC	2SK620	3N	RD7.5M-T2B2	752
2SA1576	FQ~FS	2SK665	30	RLZ5.6B	753
2SA1577	HQ~HS	3SK179	V03	RLZ8.2B	822
2SA1610	Y33, Y34			RD7.5MB3	125
2SA1611(56)	M5, M6			RD8.2MB2	165
2SB1218(RS)	AR, AS				
2SB624	BV4				







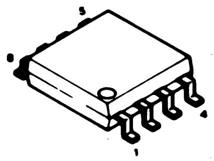
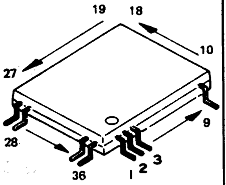
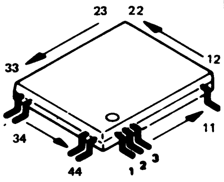
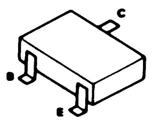
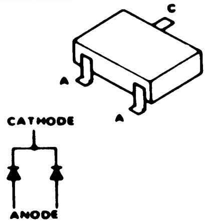
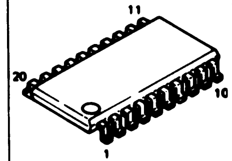
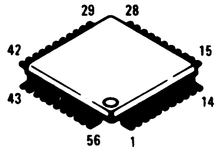
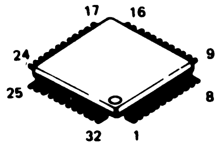
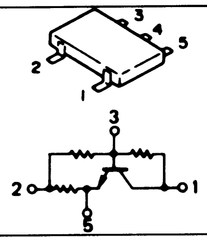
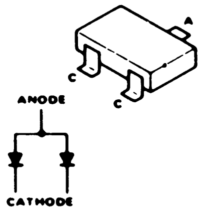
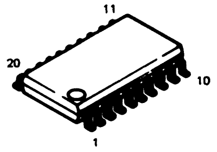
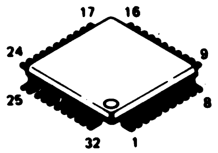
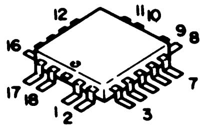
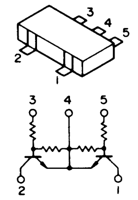
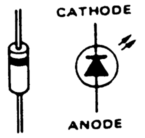
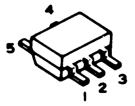
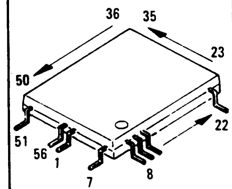
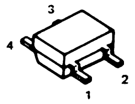
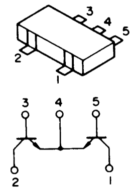
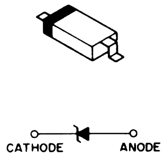
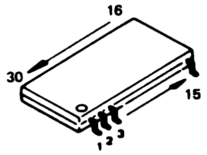
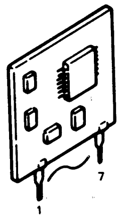
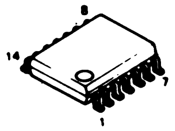
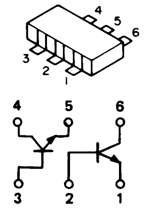
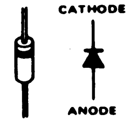
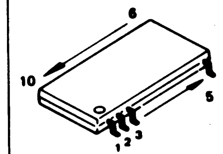
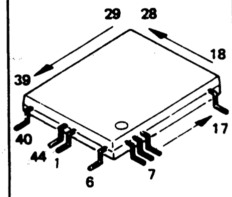
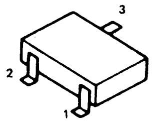
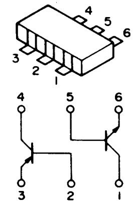
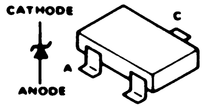
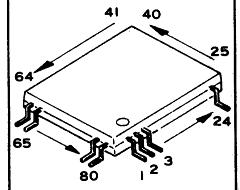
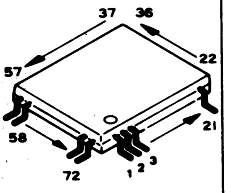
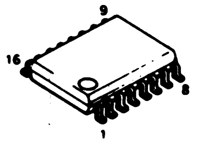
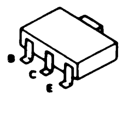
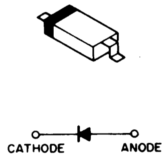
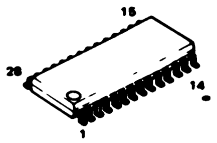
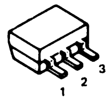
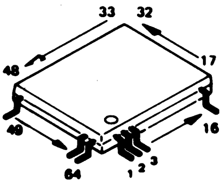
5.4 KEY TO ABBREVIATIONS

A	AC	Alternating Current
	ACC	Automatic Color Control
	A/CTL	Audio/Control
	ADC	Analog to Digital Converter
	ADD	Adder
	ADJ	Adjustment
	AE	Audio Erase
	AEF	Automatic Editing Function
	AF	**Auto Focus**
	AFC	Automatic Frequency Control
	AFT	Automatic Fine Tuning
	AGC	Automatic Gain Control
	AH	Audio Head
	AL	**After Loading, Allways**
	ALC	Automatic Light Compensation Automatic Level Control
	ALM	Alarm
	ALU	Arithmetic Logic Unit
	AM	Amplitude Modulation
	AMP	Amplifier
	ANT	Antenna
	APC	Automatic Pedestal Control Automatic Phase Control
	APL	Average Picture Level
	A S M	Audio/Servo/Mechacon
	ASS'Y	Assembly
	ATT	Attenuator
	AUD	Audio
	AUTO	Automatic
	AUX	Auxiliary
B	B	**Base, Blue**
	BAL	Balance
	BATT	Battery
	BBD	Bucket Brigade Device
	BCD	Binary Coded Decimal
	BEG	Beginning
	BF	**Behind Focus**
	BFP	Burst Flag Pulse
	BPF	**Band Pass Filter**
	BIT	Binary Digit
	BLK	Black, Blanking
	BLU	Blue
	BNC	Bayonet Connector
	BOT	Beginning of Tape
	BPF	Bandpass Filter
	BRK	Brake
	BRN	Brown
	BRT	Brightness
	BT	Band Tuning
	BUFF	Buffer
	BW or B/W	Black and White
C	C	**Capacitance, Collector, Color, Character**
	CA	**Camera**
	CAL	Calibration
	CAP	Capstan, Capacitor
	CAR	Carrier
	CARR	Carrier
	CASS	Cassette
	CC	Cassette Compartment
	CCD	Charge Coupled Device
	CCT	Circuit
	CdS	Cadmium Sulphide
	CD	Count Down
	CE	Chip Enable
	CF	**Ceramic Filter, Color Frame, Correct Focus**
	CH	Channel
	CHG	Charge
	CHROMA	Chrominance
	CLK	Clock
	CLR	Clear
	CMD	Command
	CMOS	Complementary Metal Oxide Semiconductor
	CNT	Count, Counter
	COL	Color
	COM	Common
	COMB	Combination Comb Filter
	COMP	Comparator Composite Compensation
	CONN	Connector
	CONV	Converter
	CP	Circuit Protector Clamp Pulse
	CPC	Capstan Phase Control
	CPU	Central Processing Unit
	CTC	Crosstalk Cancel
	CTL	Control
D	D	Drum, Digital, Diode, Drain
	DAC	Digital to Analog Converter
	dB	Decibel
	DC	Direct Current
	DD	Direct Drive
	DEC	Decoder
	DEMOD	Demodulator
	DEMUX	Demultiplexer
	DET	Detector
	DEV	Deviation
	DFRS	Drum Free Running Stop
	DG	Differential Gain
	DIF	Differential
	DISCR	Discriminator
	DL	Delay Line
	DOC	Dropout Compensator
	DOD	Drop Out Detector
	DP	Differential Phase
	DPC	Drum Phase Control
	DYAC	Dynamic Aperture Control
E	E	Edit, Emitter
	EDP	Electronic Data Processing
	E-E	Electric to Electric
	EF	Emitter Follower
	EMP	Emphasis
	EN	Enable
	ENC	Encoder
	ENV	Envelope
	EOT	End of Tape
	EP	Extended Play
	EQ	Equalizer
	ES	Electronic Switch
	ESNS	End Sensor
	EXP	Expander
	EXT	External
F	F	Farad, Fuse
	F ADV	Frame Advance
	FDP	Fluorescent Display Panel
	FE	Full Erase
	FET	Field Effect Transistor
	FF	**Fast Forward, Front Focus** Flipflop
	FG	Frequency Generator
	FM	Frequency Modulation
	FR	Full Recording, Frame, Fusible Resistor
	FREQ	Frequency
	F-V CONV	Frequency to Voltage Converter
	FWD	Forward
	FWD S	Forward Search
G	G	Green, Gate, Grid
	GEN	Generator
	GND	Ground
	GRN	Green
	GRY	Gray
H	H	High, Henry, Hour
	HBF	Horizontal Burst Flag
	HD	Horizontal Drive
	HPF	Highpass Filter
	Hz	Herz

I	IC	: Integrated Circuit
	ID	: Identification (Pulse)
	IF	: Intermediate Frequency
	IFR	: Infrared
	IFT	: Intermediate Frequency Transformer
	IND	: Indicator
	INH	: Inhibit
	INS	: Insert
	INT	: Internal, Interrupt
	INV	: **Inverter, Interleave**
	I/O	: Input/Output
	IR	: Infrared
L	L	: Low, Left
	LCD	: Liquid Crystal Display
	LED	: Light Emitting Diode
	LIM	: Limiter
	LIN	: Linearity
	LLD	: Low Light Detector
	LOAD	: Loading (Cassette)
	LP	: Long Play
	LPF	: Lowpass Filter
	LSB	: Lower Sideband
M	M	: Motor, Mega
	MAX	: Maximum
	MDA	: Motor Drive Amplifier
	MECHACON	: Mechanism Control
	MIC	: Microphone
	MIN	: Minimum
	MIX	: Mixer, Mixing
	MMV	: Monostable Multivibrator
	MNOS	: Metal Nitride Oxide Semiconductor
	MOD	: Modulation, Modulator
	MODEM	: Modulator-Demodulator
	MON	: Monitor
	MOS	: Metal Oxide Semiconductor
	MPX	: Multiplexer, Multiplex
	MS	: Mode Select
	MUT	: Muting
N	NAND	: Not And
	NC	: Not Connected, Normally Closed
	NFB	: Negative Feedback
	NLN	: Non-Linear
	NO	: Normally Open
	NOR	: Normal, Not-Or
	NR	: Noise Reduction
O	OP	: Operation
	OPAMP	: Operational Amplifier
	ORG	: Orange
	OSC	: Oscillator
P	PB	: Playback
	PC	: Photocoupler, Pulse Counter
	PCM	: Pulse Code Modulation
	PG	: Pulse Generator
	PGM	: Program
	PI	: Photo Interrupter
	PIC	: Picture Control
	PIF	: Picture Intermediate Frequency
	PLA	: Programmable Logic Array
	PLL	: Phase Locked Loop
	PNK	: Pink
	POS	: Position
	p-p	: Peak-to-Peak
	PR	: Pinch Roller
	PREAMP	: Preamplifier
	PRL	: Preroll
	P/S	: Pause/Still
	PSC	: Pulse Swallowing Control
	PU	: Pickup
	PUT	: Programmable Unijunction Transistor
	PWB	: Printed Wiring Board
	PWM	: Pulse Width Modulation
	PWR	: Power
Q	Q	: Quality Factor
R	R	: Red, Right
	RA	: Resistor Array
	RAM	: Random Access Memory
	REC	: Recording
	REF	: Reference
	REG	: Regulated, Regulator
	REM	: Remote
	REMOCON	: Remote Control (Unit)
	REV	: Reverse
	REV S	: Reverse Search
	REW	: Rewind
	RF	: Radio Frequency
	ROM	: Read Only Memory
	R/P	: Record/Playback
	RPT	: Repeat
	RS FF	: RS Flipflop
	RST	: Reset
	RT	: Rotary Transformer
	RUN	: Running
	RY	: Relay
S	SAW	: Sawtooth, Surface Acoustic Wave
	SC	: Subcarrier, Simulcast
	SCH	: Search
	SEL	: Select, Selector
	SENS	: Sensor
	SEP	: Separator
	SF	: Source Follower
	SFF	: Short Fast Forward
	SIF	: Sound Intermediate Frequency
	SN	: Signal to Noise Ratio
	SOL	: Solenoid
	SOS	: Sound on Sound
	SP	: Standard Play
	SR	: Supply Reel
	SREW	: Short Rewind
	S/S	: Slow/Still
	SSG	: Sync Signal Generator
	SSNS	: Start Sensor
	STD	: Strobe Data, Standard
	SUP	: Supply
	SW	: Switch
	SWD	: Switched
	SYNC	: Synchronization
T	TAL	: Tally
	TBC	: Time Base Corrector
	TC	: Tension Control, Time Code
	TEN	: Tension
	TF	: Thermal Fuse
	TIM	: Timing
	TK	: Tracking
	TNR	: Tuner
	TP	: Test Point
	TPZD	: Trapezoid
	TR	: Transistor, Trimmer
	TRANS	: Transformer
	TU	: Take-up
U	UL	: Unloading
	UNREG	: Unregulated
	UNSW	: Unswitched
V	V	: Vertical, Volt
	VACT	: Video Action
	VCO	: Voltage Controlled Oscillator
	VD	: Vertical Drive
	VIF	: Video Intermediate Frequency
	VLT	: Violet
	VR	: Variable Resistor
	VS	: Video and Sync
	VSCH	: Variable Search
	VV	: Video to Video
	VXO	: Variable Crystal Oscillator
W	W	: Watt
	WARN	: Warning
	W & D	: White and Dark
	WHT	: White
	WV	: Working Voltage
X	XTAL	: Crystal
Y	Y	: Luminance
	YEL	: Yellow

5.5 SEMICONDUCTOR SHAPES

	NAME	L
	IC	
A	AN1393S	1A
	AN2514S	7C
	AN78L05	8B
B	BA7043FS	2A
	BA7046F	1A
	BA7606F	7C
	BA7757BK	2C
	BU2728K	1C
	BU4053BF	7C
	BU4584BF	5C
C	CAT93C46K-XE	1A
H	HA118130MA	4B
	HA118149MA	4B
	HA13489MP	3C
I	IR3P67A	1B
J	JCY0001A2	2B
	JCY0002A1	3B
	JCY0007	6B
	JCY0011	2A
	JCY0012	7B
L	LB1851M	5A
	LM324DB	5C
	LM358DB-WE	1A
	LM393DB	1A
M	MM1031XM	4C
	MM1036XF	1A
	MN12821(QR)	6C
	MN18888JFGS	8C
	MN3110SA	2A
	MN4464S-08LL	8A
	MN5152S	8C
	MSM6832MS	2A
	MSM6834MS	1A
	M37120M6-102FP	7A
	M5237L	8B
	M5282FP	3A
	M54543AFP	6A
	M56780VP	2A
P	PEIC2396	5B
S	S-8052ANB-NE	8B
	S-8054HN-CB	8B
	S-81250HG-RD	8B
	S-87050AF	4A
T	TC4S584F	4A
	TC4S69F	4A
	TC7S04F	4A
	TL8808F	1A
U	UPC1093T	8B
V	VC5035	5A
	TRANSISTOR	
D	DTA114EE	1D
	DTA114EU	1D
	DTA124EE	1D
	DTA144EE	1D
	DTC114EE	1D
	DTC114EU	1D
	DTC124EU	1D
	DTC144EE	1D
F	FMU1	2D
U	UMG2	3D
	UMW1	4D
	UMZ1	6D
	UN9111	1D
	UN9113	1D
	UN9213	1D
X	XP2501	5D
	XP5601	5D
2	2SA1163-BL	1D
	2SA1532(BC)	1D
	2SA1577(PQR)	1D
	2SA1577(QR)	1D
	2SA1774(QRS)	1D
	2SA1774(RS)	1D
	2SB1132(QR)	7D
	2SB1218(QR)	1D
	2SC3936(BC)	1D
	2SC4181	1D
	2SC4617(QRS)	1D
	2SC4617(R)	1D
	2SC4617(RS)	1D
	2SD1819(QR)	1D
	2SD1898T100R	7D
	DIODE	
D	DAN222	1E
E	ERA22-10	5E
M	MA132WA	2E
	MA132WK	1E
	MA133	5E
	MA141WA	1E
	MA141WK	1E
	MA152WA	1E
	MA366	7E
	MA704	6E
R	RB451F	1E
	RD6.8M(B1)	6E
	RD7.5M(B2)	6E
	RLZ8.2B	4E
S	SLH-34VC3F	3E

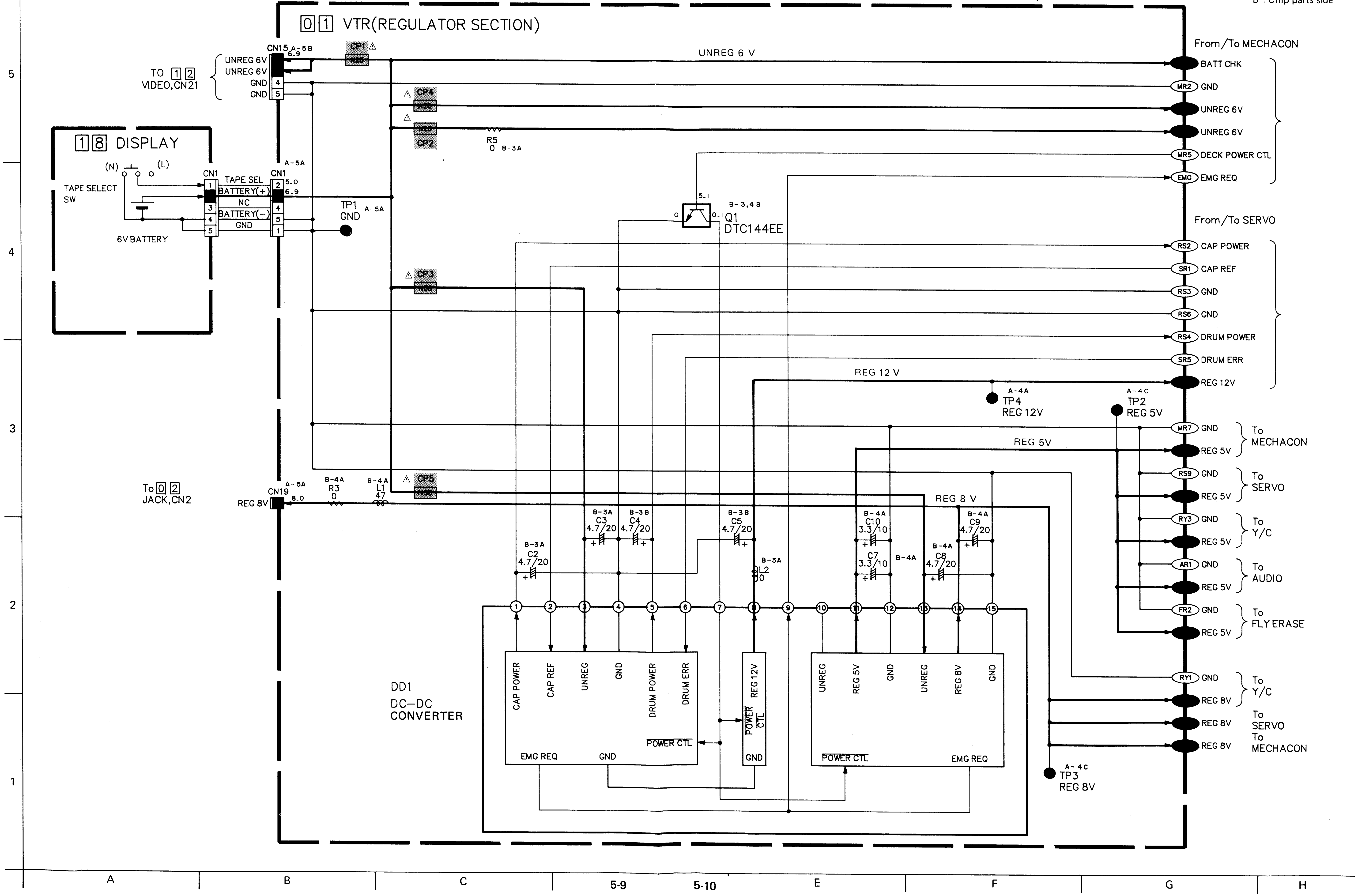
	IC			TRANSISTOR	DIODE
	A	B	C	D	E
1					
2					
3					
4					
5					
6					
7					
8					

5.6 REGULATOR SCHEMATIC DIAGRAM

● Shaded (▨) parts are critical for safety.
Replace only with specified part numbers.

● Voltage
REC : Y/C separator input, color bar SP mode, VHS mode.
PB : Alignment tape, color bar SP mode, VHS mode.
*Where voltage differ between recording and palyback, the voltage during playback is shown in parenthesis.

● Address of chip parts
A-1D
Address
A : Discrete parts side
B : Chip parts side


01 VTR(REGULATOR SECTION)
18 DISPLAY
TO 12 VIDEO,CN21
CN15 A-5B
UNREG 6V
UNREG 6V
GND
GND
6.9
CP1 △
N25
UNREG 6 V
△ CP4
N26
△
N26
CP2
R5
0 B-3A
TAPE SELECT SW
(N)
(L)
6V BATTERY
CN1
TAPE SEL
BATTERY(+)
NC
BATTERY(−)
GND
A-5A
CN1
5.0
6.9
TP1 GND A-5A
5.1
B-3,4B
0
0.1 Q1
DTC144EE
△ CP3
N56
△ CP5
N56
To 02 JACK,CN2
CN19 A-5A
REG 8V
8.0
B-4A R3 0
B-4A L1 47
B-3A C2 4.7/20
B-3A C3 4.7/20
B-3B C4 4.7/20
B-3B C5 4.7/20
B-3A L2 0
B-4A C10 3.3/10
C7 3.3/10
B-4A
B-4A C8 4.7/20
B-4A C9 4.7/20
REG 12 V
A-4A TP4 REG 12V
A-4C TP2 REG 5V
REG 5V
REG 8 V
A-4C TP3 REG 8V
DD1
DC–DC CONVERTER
CAP POWER
CAP REF
UNREG
GND
DRUM POWER
DRUM ERR
EMG REQ
GND
POWER CTL
REG 12V
POWER CTL
GND
UNREG
REG 5V
GND
UNREG
REG 8V
GND
POWER CTL
EMG REQ
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
From/To MECHACON
BATT CHK
MR2 GND
UNREG 6V
UNREG 6V
MR5 DECK POWER CTL
EMG EMG REQ
From/To SERVO
RS2 CAP POWER
SR1 CAP REF
RS3 GND
RS6 GND
RS4 DRUM POWER
SR5 DRUM ERR
REG 12V
MR7 GND
REG 5V
To MECHACON
RS9 GND
REG 5V
To SERVO
RY3 GND
REG 5V
To Y/C
AR1 GND
REG 5V
To AUDIO
FR2 GND
REG 5V
To FLY ERASE
RY1 GND
REG 8V
To Y/C
REG 8V
To SERVO
REG 8V
To MECHACON
6 5 4 3 2 1
A B C D E F G H

5.7 SERVO SCHEMATIC DIAGRAM

- Voltage

REC : Y/C separator input, color bar SP mode, VHS mode.
PB : Alignment tape, color bar SP mode, VHS mode.
*Where voltage differ between recording and palyback, the voltage during playback is shown in parenthesis.

- Waveform

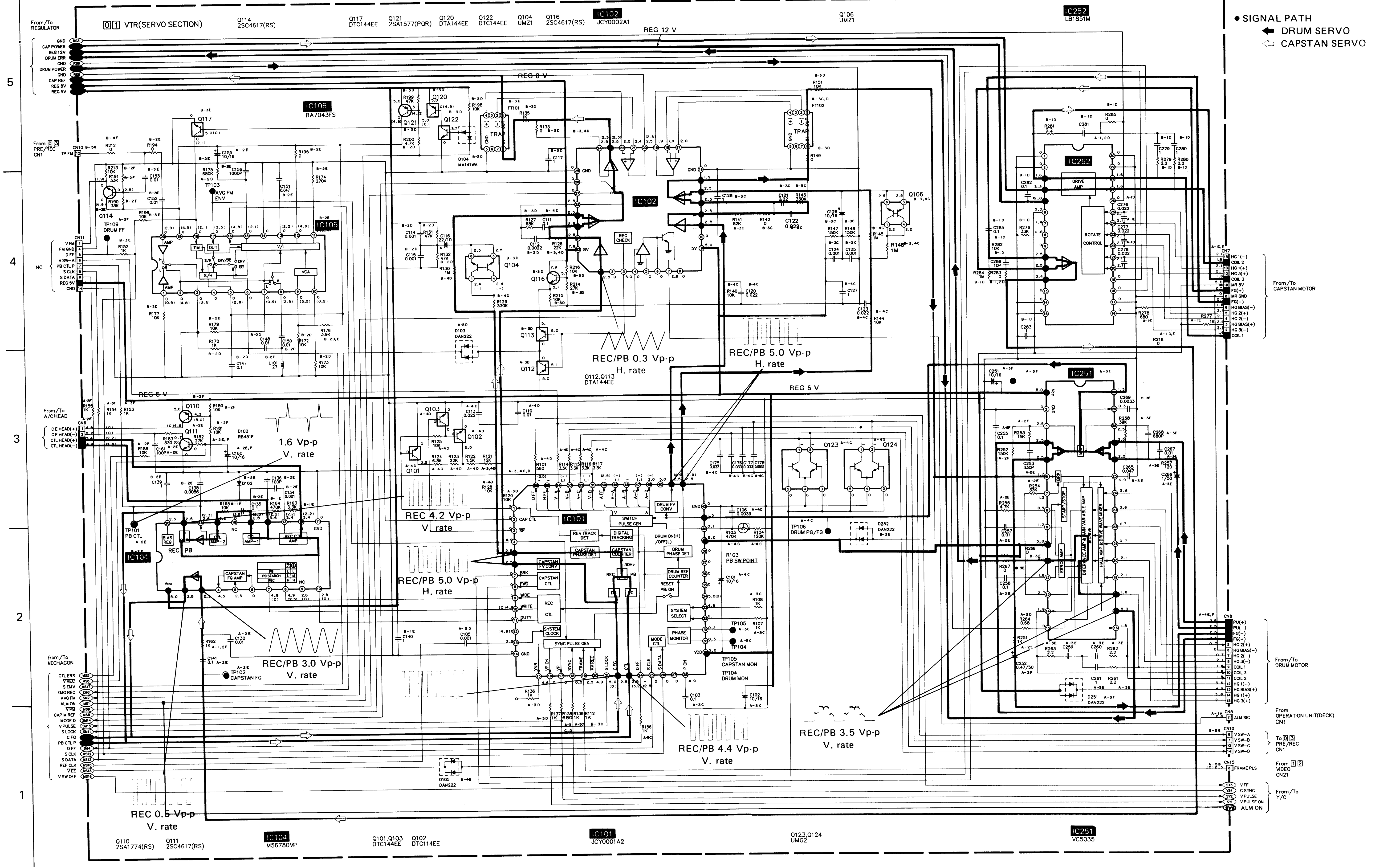
REC : Y/C separator input, color bar SP mode, VHS mode.
PB : Alignment tape, color bar SP mode, VHS mode.

- Address of chip parts

A-1D — Address
A : Discrete parts side
B : Chip parts side

- SIGNAL PATH

◀ DRUM SERVO
◁ CAPSTAN SERVO



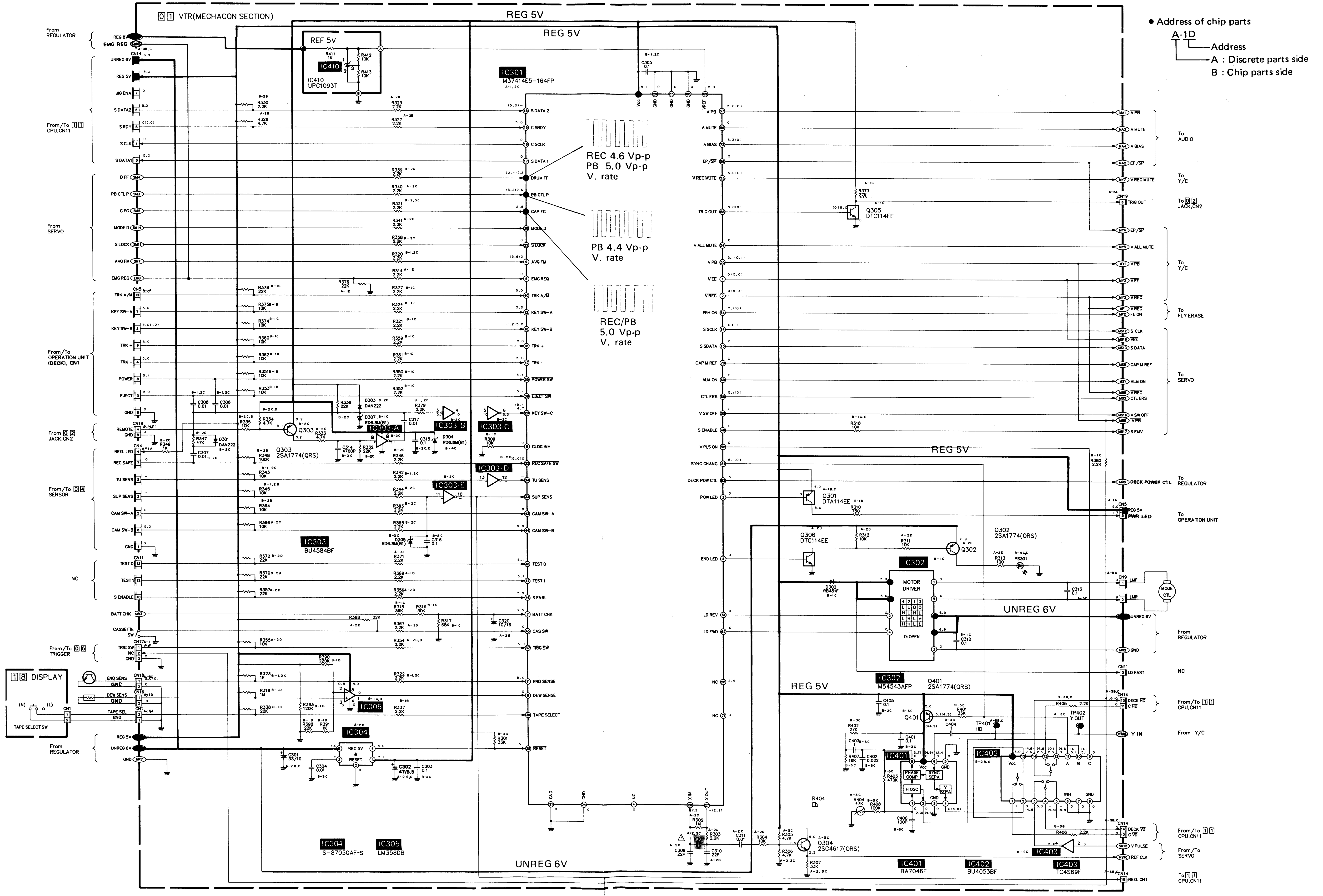
6
5
4
3
2
1
01 VTR(SERVO SECTION)
From/To REGULATOR
GND
CAP POWER
REG 12V
DRUM ERR
DRUM POWER
GND
CAP REF
REG 8V
REG 5V
REG 12 V
REG 8 V
REG 5 V
From 03 PRE/REC CN1
TP FM
IC105
BA7043FS
IC102
JCY0002A1
IC252
LB1851M
IC101
JCY0001A2
IC104
M56780VP
IC251
VC5035
Q114 2SC4617(RS)
Q117 DTC144EE
Q121 2SA1577(PQR)
Q120 DTA144EE
Q122 DTC144EE
Q104 UMZ1
Q116 2SC4617(RS)
Q106 UMZ1
Q110 2SA1774(RS)
Q111 2SC4617(RS)
Q101,Q103 DTC144EE
Q102 DTC114EE
Q123,Q124 UMG2
Q112,Q113 DTA144EE
TP103 AVG FM ENV
TP109 DRUM FF
NC
VFM
FM GND
DFF
VSW-A
PB CTL P
S CLK
S DATA
REG 5V
GND
From/To A/C HEAD
CE HEAD(+)
CE HEAD(-)
CTL HEAD(+)
CTL HEAD(-)
From/To MECHACON
CTLERS
VREC
SEMV
EMG REQ
AVG FM
ALM ON
VPB
CAP M REF
MODE D
V PULSE
S LOCK
CFG
PB CTL P
D FF
S CLK
S DATA
REF CLK
VEE
V SW OFF
TP101 PB CTL
TP102 CAPSTAN FG
TP104 DRUM MON
TP105 CAPSTAN MON
TP106 DRUM PG/FG
R103 PB SW POINT
1.6 Vp-p V. rate
REC 4.2 Vp-p V. rate
REC/PB 5.0 Vp-p H. rate
REC/PB 3.0 Vp-p V. rate
REC 0.5 Vp-p V. rate
REC/PB 0.3 Vp-p H. rate
REC/PB 5.0 Vp-p H. rate
REC/PB 4.4 Vp-p V. rate
REC/PB 3.5 Vp-p V. rate
BIAS REG
REC PB
CAPSTAN FG AMP
CTL AMP-2
CTL AMP-1
REC CTL AMP
PB SEARCH
CAP CTL
SP
CAPSTAN FV CONV
CAPSTAN CTL
BRK
FWD
WIDE
WRITE
DUTY
REC CTL
SYSTEM CLOCK
SYNC PULSE GEN
REV TRACK DET
DIGITAL TRACKING
CAPSTAN PHASE DET
CAPSTAN COUNTER
SWITCH PULSE GEN
DRUM FV CONV
DRUM ON(H) /OFF(L)
DRUM PHASE DET
DRUM REF COUNTER
RESET PB: ON
SYSTEM SELECT
PHASE MONITOR
MODE CTL
REG CHECK
TRAP
FT101
FT102
DRIVE AMP
ROTATE CONTROL
START/STOP
GAIN VARIABLE AMP
DIFFERENCE AMP & DRIVE
HALL AMP & DRIVE WAVE MIXER
ERROR AMP
From/To CAPSTAN MOTOR
CN7
HG 1(-)
COIL 2
HG 1(+)
HG 3(+)
COIL 3
MR 5V
FG(-)
FG(+)
MR GND
HG BIAS(-)
HG 2(+)
HG 2(-)
HG BIAS(+)
HG 3(-)
COIL 1
From/To DRUM MOTOR
CN8
PU(+)
PU(-)
FG(-)
FG(+)
HG 2(+)
HG BIAS(-)
HG 2(-)
HG 3(-)
COIL 1
COIL 3
COIL 2
HG 1(-)
HG BIAS(+)
HG 1(+)
HG 3(+)
CN5
ALM SIG
From OPERATION UNIT(DECK) CN1
CN10
V SW-A
V SW-B
V SW-C
V SW-D
To 03 PRE/REC CN1
CN15
FRAME PLS
From 12 VIDEO CN21
VFF
C SYNC
V PULSE
V PULSE ON
ALM ON
From/To Y/C
D102 RB451F
D104 MA141WA
D103 DAN222
D105 DAN222
D251 DAN222
D252 DAN222
A
B
C
E
F
G
H

5.8 MECHACON SCHEMATIC DIAGRAM

- **Shaded (▨) parts are critical for safety.**
  Replace only with specified part numbers.

- Voltage
  REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.
  *Where voltage differ between recording and palyback, the voltage during playback is shown in parenthesis.

- Waveform
  REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.


01 VTR(MECHACON SECTION)
REG 5V
REF 5V
IC410 UPC1093T
IC301 M37414E5-164FP
REC 4.6 Vp-p
PB 5.0 Vp-p
V. rate
PB 4.4 Vp-p
V. rate
REC/PB
5.0 Vp-p
V. rate
From REGULATOR
From/To 11 CPU,CN11
From SERVO
From/To OPERATION UNIT (DECK), CN1
From 02 JACK,CN2
From/To 04 SENSOR
NC
From/To 05 TRIGGER
18 DISPLAY
TAPE SELECT SW
IC303 BU4584BF
IC303-A
IC303-B
IC303-C
IC303-D
IC303-E
Q303 2SA1774(QRS)
IC304 S-87050AF-S
IC305 LM358DB
REG 5V & RESET
Q305 DTC114EE
Q301 DTA114EE
Q306 DTC114EE
Q302 2SA1774(QRS)
IC302 M54543AFP
MOTOR DRIVER
O: OPEN
UNREG 6V
Q401 2SA1774(QRS)
IC401 BA7046F
PHASE COMP
SYNC SEPA
H OSC
V SEPA
IC402 BU4053BF
IC403 TC4S69F
Q304 2SC4617(QRS)
TP401 HD
TP402 Y OUT
MODE CTL
To AUDIO
To Y/C
To 02 JACK,CN2
To FLY ERASE
To SERVO
To REGULATOR
To OPERATION UNIT
From REGULATOR
From/To 11 CPU,CN11
From Y/C
From/To SERVO
To 11 CPU,CN11

- Address of chip parts
  A-1D
  Address
  A : Discrete parts side
  B : Chip parts side

5.9 AUDIO SCHEMATIC DIAGRAM

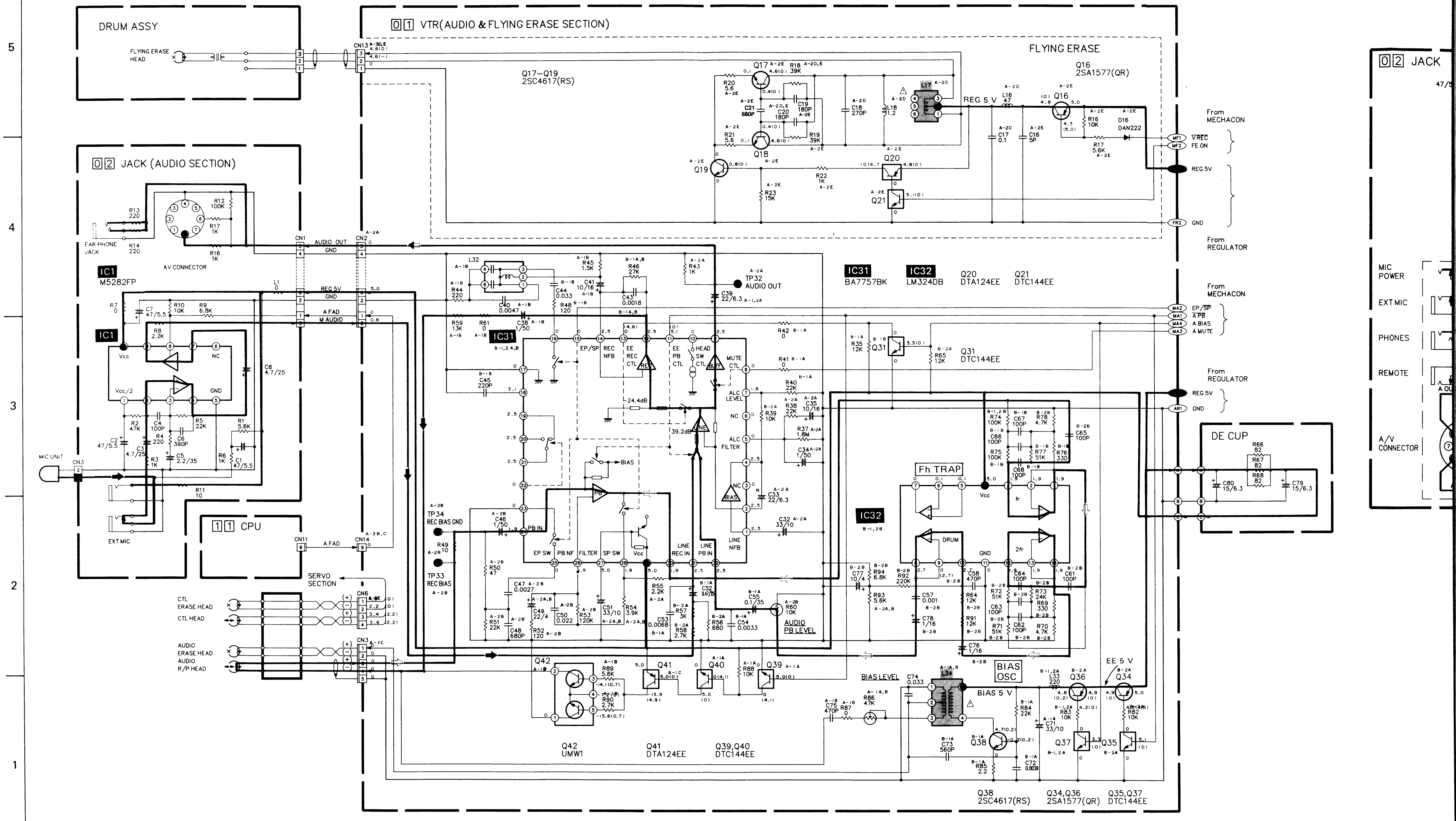
5.10

- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

- Voltage
  REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.
  *Where voltage differ between recording and palyback, the voltage during playback is shown in parenthesis.

- Address of chip parts
  A-1D
  Address
  A : Discrete parts side
  B : Chip parts side

- SIGNAL PATH
  ◀ REC
  ◁ PB
  ◀ REC & PB



6
5
4
3
2
1
DRUM ASSY
FLYING ERASE HEAD
01 VTR(AUDIO & FLYING ERASE SECTION)
FLYING ERASE
CN13
Q17-Q19
2SC4617(RS)
Q16
2SA1577(QR)
Q17
Q18
Q19
Q20
Q21
L17
REG 5 V
L16 47
D16 DAN222
From MECHACON
VREC
FE ON
REG 5V
GND
From REGULATOR
02 JACK
02 JACK (AUDIO SECTION)
EAR PHONE JACK
A.V.CONNECTOR
IC1
M5282FP
MIC UNIT
CN3
EXT MIC
11 CPU
CN1
CN2
AUDIO OUT
GND
REG 5V
A FAD
M AUDIO
CN11
CN14
SERVO SECTION
CTL ERASE HEAD
CTL HEAD
AUDIO ERASE HEAD
AUDIO R/P HEAD
CN6
CN3
IC31
BA7757BK
IC32
LM324DB
Q20 DTA124EE
Q21 DTC144EE
TP32 AUDIO OUT
TP34 REC BIAS GND
TP33 REC BIAS
EP/SP
REC NFB
EE REC CTL
EE PB CTL
HEAD SW CTL
MUTE CTL
ALC LEVEL
NC
ALC FILTER
BIAS
LINE NFB
LINE REC IN
LINE PB IN
PB IN
EP SW
PB NF
FILTER
SP SW
Vcc
24.4dB
39.2dB
Q31 DTC144EE
From MECHACON
EP/SP
A PB
A BIAS
A MUTE
From REGULATOR
REG 5V
GND
DE CUP
Fh TRAP
DRUM
GND
2fr
fr
AUDIO PB LEVEL
Q42
Q41
Q40
Q39
Q42 UMW1
Q41 DTA124EE
Q39,Q40 DTC144EE
BIAS LEVEL
L34
BIAS OSC
BIAS 5 V
EE 5 V
Q34
Q35
Q36
Q37
Q38
Q38 2SC4617(RS)
Q34,Q36 2SA1577(QR)
Q35,Q37 DTC144EE
MIC POWER
EXT MIC
PHONES
REMOTE
A/V CONNECTOR
A
B
C
E
F
G
H

re critical for safety.
ecified part numbers.

- Voltage

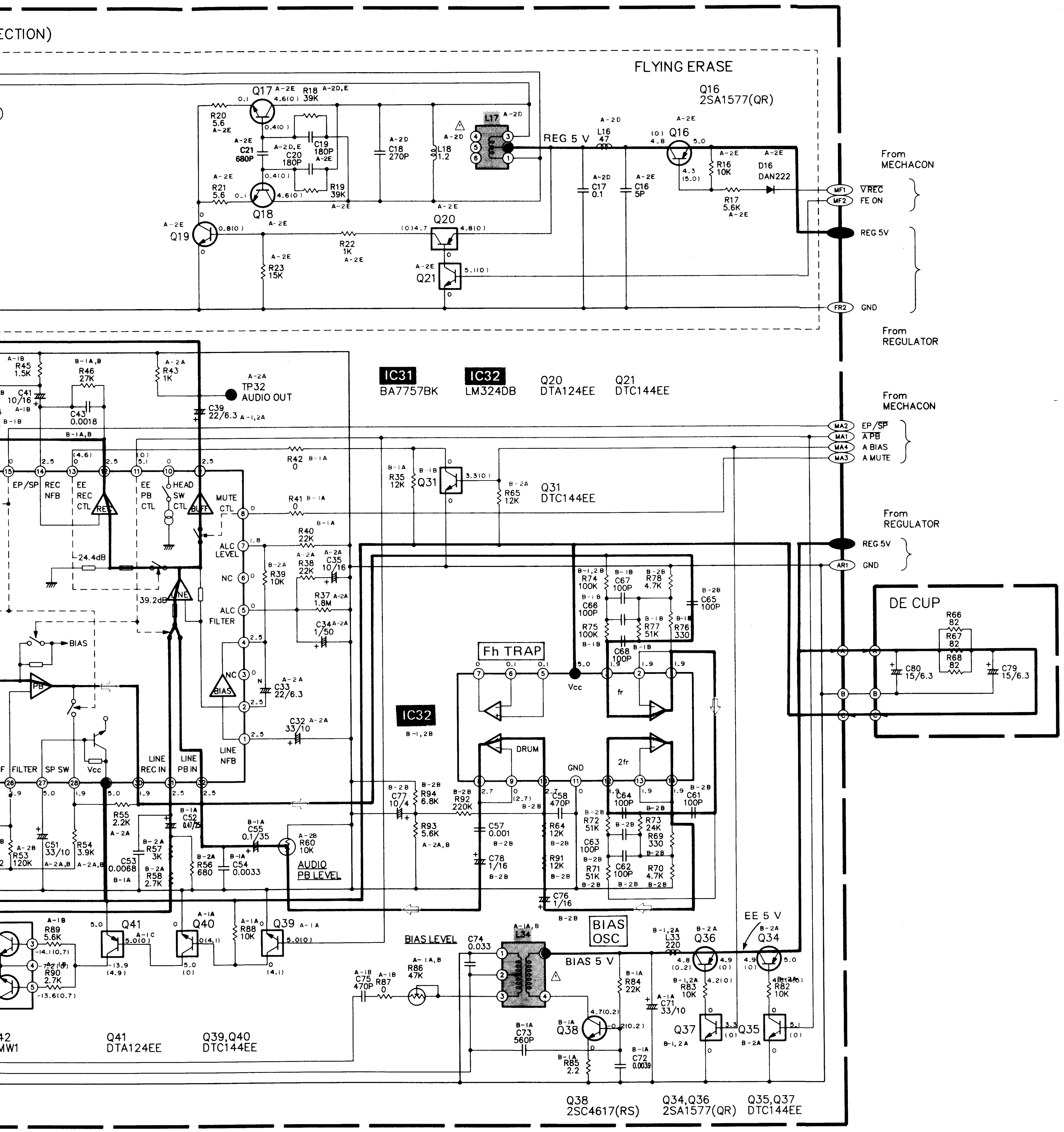
REC : Y/C separator input, color bar SP mode, VHS mode.
PB : Alignment tape, color bar SP mode, VHS mode.
*Where voltage differ between recording and palyback, the voltage during playback is shown in parenthesis.

- Address of chip parts

A-1D
Address
A : Discrete parts side
B : Chip parts side

- SIGNAL PATH

🡐 REC
⇦ PB
⇦ REC & PB


ECTION)
FLYING ERASE
Q16
2SA1577(QR)
Q17
Q18
Q19
Q20
Q21
L17
L18
L16
REG 5 V
D16 DAN222
From MECHACON
VREC
FE ON
REG 5V
GND
From REGULATOR
IC31 BA7757BK
IC32 LM324DB
Q20 DTA124EE
Q21 DTC144EE
TP32 AUDIO OUT
EP/SP
A PB
A BIAS
A MUTE
Q31 DTC144EE
ALC LEVEL
ALC FILTER
LINE NFB
BIAS
Fh TRAP
DRUM
2fr
IC32
DE CUP
BIAS LEVEL
BIAS OSC
BIAS 5 V
EE 5 V
AUDIO PB LEVEL
Q41 DTA124EE
Q39,Q40 DTC144EE
Q38 2SC4617(RS)
Q34,Q36 2SA1577(QR)
Q35,Q37 DTC144EE

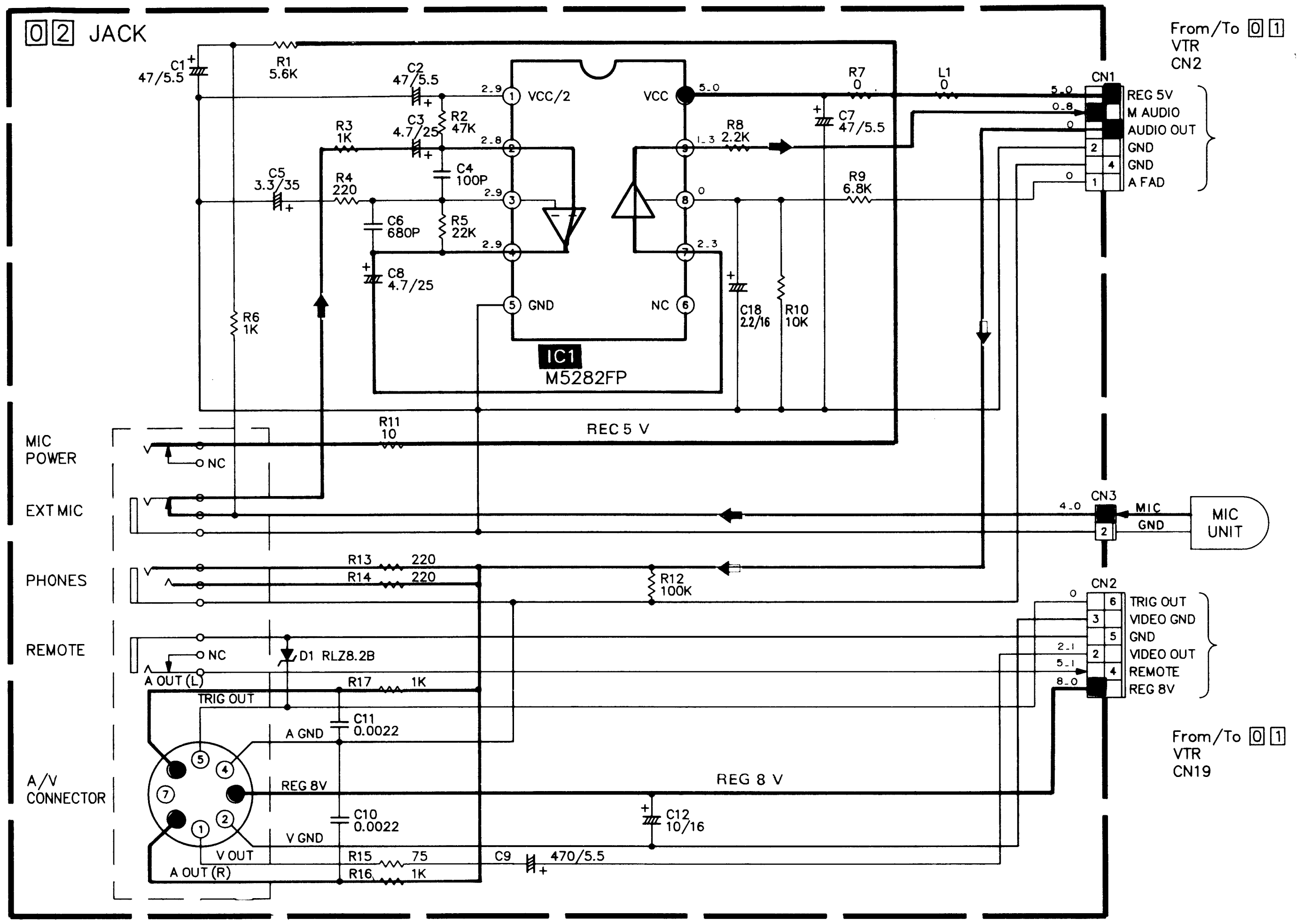
5.10 JACK SCHEMATIC DIAGRAM

- Address of chip parts

A-1D
Address
A : Discrete parts side
B : Chip parts side

- SIGNAL PATH

🡐 REC
⇦ REC & PB

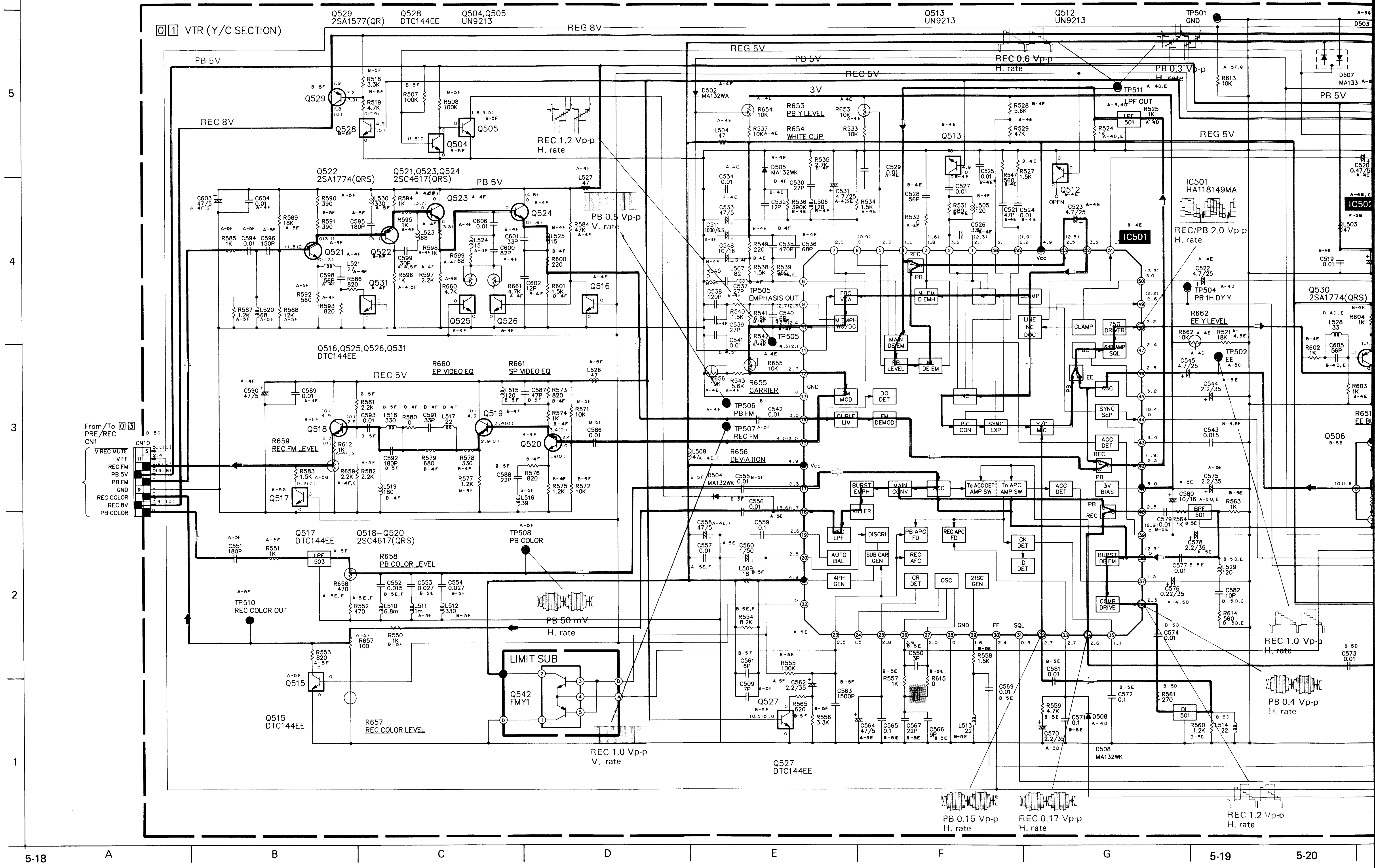

02 JACK
IC1 M5282FP
VCC/2
VCC
GND
NC
REC 5 V
REG 8 V
MIC POWER
EXT MIC
PHONES
REMOTE
A/V CONNECTOR
D1 RLZ8.2B
A OUT (L)
TRIG OUT
A GND
REG 8V
V GND
V OUT
A OUT (R)
CN1
REG 5V
M AUDIO
AUDIO OUT
GND
A FAD
From/To 01 VTR CN2
CN3
MIC
GND
MIC UNIT
CN2
TRIG OUT
VIDEO GND
VIDEO OUT
REMOTE
From/To 01 VTR CN19

5.11 Y/C SCHEMATIC DIAGRAM

- Voltage REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.
  *Where voltage differ between recording and palyback, the voltage during playback is shown in parenthesis.

● Shaded (▨) parts are critical for safety.
Replace only with specified part numbers.

- Waveform
  REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.



6
5
4
3
2
1
A
B
C
D
E
F
G
01 VTR (Y/C SECTION)
Q529 2SA1577(QR)
Q528 DTC144EE
Q504,Q505 UN9213
Q513 UN9213
Q512 UN9213
TP501 GND
REG 8V
REG 5V
PB 5V
REC 5V
REC 8V
3V
R653 PB Y LEVEL
R654 WHITE CLIP
REC 0.6 Vp-p H. rate
PB 0.3 Vp-p H. rate
TP511
LPF OUT
D502 MA132WA
D507 MA133
REC 1.2 Vp-p H. rate
Q522 2SA1774(QRS)
Q521,Q523,Q524 2SC4617(QRS)
PB 0.5 Vp-p V. rate
IC501 HA118149MA
REC/PB 2.0 Vp-p H. rate
IC501
TP505 EMPHASIS OUT
TP504 PB 1H DY Y
R662 EE Y LEVEL
TP502 EE
Q530 2SA1774(QRS)
Q516,Q525,Q526,Q531 DTC144EE
R660 EP VIDEO EQ
R661 SP VIDEO EQ
R655 CARRIER
TP506 PB FM
TP507 REC FM
R656 DEVIATION
R659 REC FM LEVEL
From/To 03 PRE/REC CN1
CN10
VREC MUTE
VFF
REC FM
PB 5V
PB FM
GND
REC COLOR
REC 8V
PB COLOR
Q517 DTC144EE
Q518-Q520 2SC4617(QRS)
TP508 PB COLOR
R658 PB COLOR LEVEL
TP510 REC COLOR OUT
PB 50 mV H. rate
LIMIT SUB
Q542 FMY1
Q515 DTC144EE
R657 REC COLOR LEVEL
REC 1.0 Vp-p V. rate
Q527 DTC144EE
X501
D508 MA132WK
D504 MA132WK
D505 MA132WK
FBC VCA
M EMPH NC/DC
MAIN DE EM
NL EMPH DE EM
NL DE EM
FB LEVEL
AP
CLAMP
LINE NC DOC
75Ω DRIVER
6dB AMP SQL
FBC
EE
AGC
SYNC SEP
AGC DET
3V BIAS
FM MOD
DO DET
DOUBLE LIM
FM DEMOD
NC
PIC CON
SYNC EXP
Y/C MIX
BURST EMPH
MAIN CONV
ACC
To ACC DET AMP SW
To APC AMP SW
ACC DET
KILLER
LPF
DISCRI
PB APC FD
REC APC FD
CK DET
ID DET
AUTO BAL
SUB CAR GEN
REC AFC
4PH GEN
CR DET
OSC
2fSC GEN
BURST DE EM
COMB DRIVE
BPF 501
DL 501
LPF 501
LPF 503
GND
FF
SQL
Vcc
REC 1.0 Vp-p H. rate
PB 0.4 Vp-p H. rate
PB 0.15 Vp-p H. rate
REC 0.17 Vp-p H. rate
REC 1.2 Vp-p H. rate
Q506
IC502

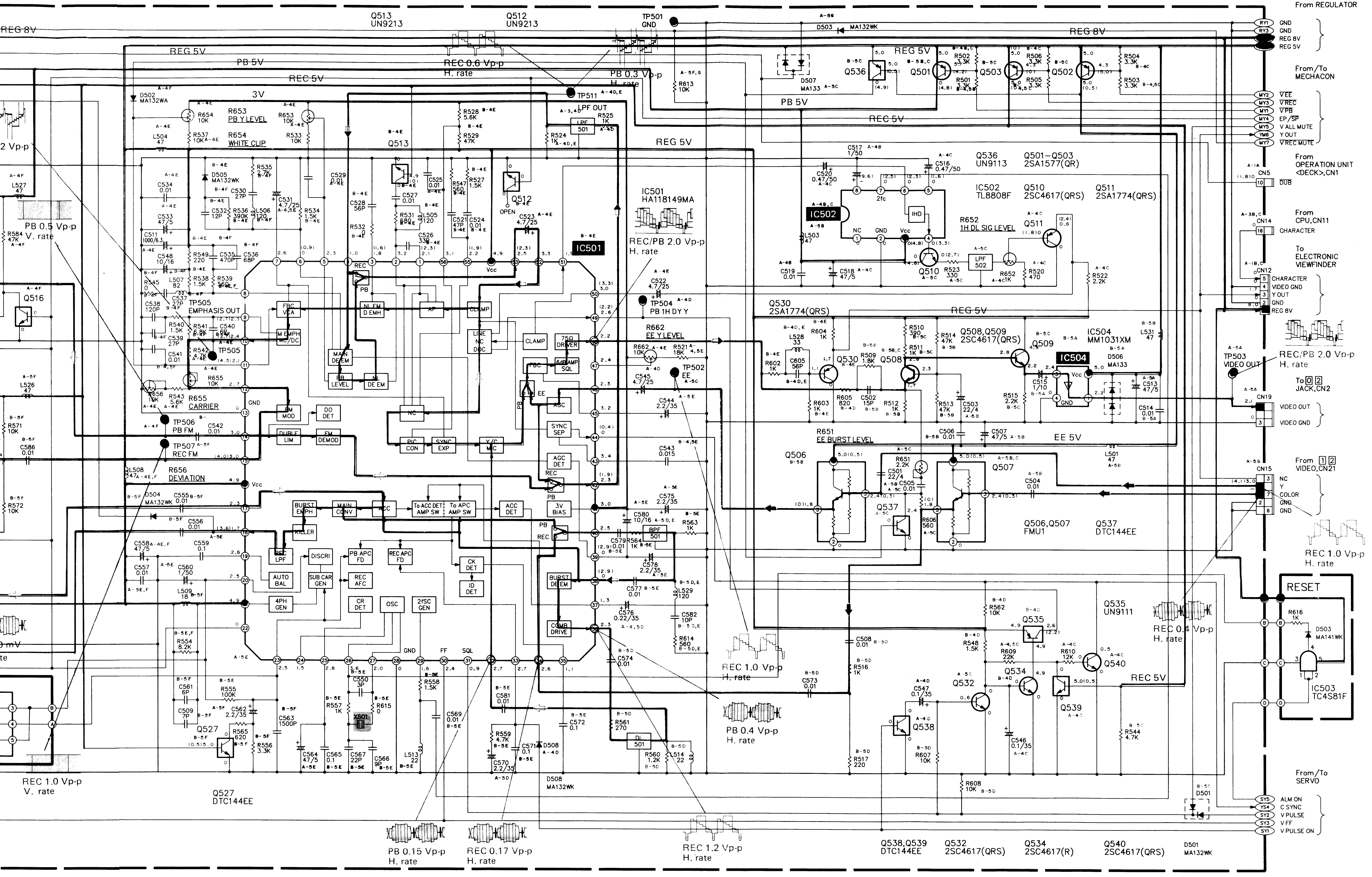
, VHS mode.
IS mode.
lyback, the
s.

- **Shaded (▨) parts are critical for safety.**
  Replace only with specified part numbers.

- Waveform
  REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.

- Address of chip parts A-1D
  Address
  A : Discrete parts side
  B : Chip parts side

- SIGNAL PATH
  ← REC
  ⇦ PB
  ⇦ REC & PB



REG 8V
REG 5V
PB 5V
REC 5V
3V
Q513 UN9213
Q512 UN9213
TP501 GND
REC 0.6 Vp-p H. rate
PB 0.3 Vp-p H. rate
TP511
LPF OUT
LPF 501
R653 PB Y LEVEL
R654 WHITE CLIP
D502 MA132WA
D505 MA132WK
IC501 HA118149MA
REC/PB 2.0 Vp-p H. rate
TP504 PB 1H DY Y
R662 EE Y LEVEL
TP502 EE
TP505 EMPHASIS OUT
R655 CARRIER
TP506 PB FM
TP507 REC FM
R656 DEVIATION
D504 MA132WK
PB 0.5 Vp-p V. rate
2 Vp-p
Q516
FBC VCA
NL EM D EMH
AP
CLAMP
M EMPH WC/DC
LINE NC DOC
MAIN DE EM
PB LEVEL
NL DE EM
75Ω DRIVER
FBC
64B AMP SQL
EE
AGC
SYNC SEP
AGC DET
NC
PIC CON
SYNC EXP
Y/C MIC
FM MOD
DO DET
DUBLE LIM
FM DEMOD
BURST EMPH
MAIN CONV
ACC
To ACC DET AMP SW
To APC AMP SW
ACC DET
3V BIAS
KILLER
REC LPF
DISCRI
PB APC FD
REC APC FD
CK DET
ID DET
AUTO BAL
SUB CAR GEN
REC AFC
BPF 501
BURST DE EM
4PH GEN
CR DET
OSC
2fSC GEN
COMB DRIVE
GND FF SQL
Vcc
X501
Q527
Q527 DTC144EE
DL 501
D508 MA132WK
REC 1.0 Vp-p V. rate
PB 0.15 Vp-p H. rate
REC 0.17 Vp-p H. rate
REC 1.2 Vp-p H. rate
PB 0.4 Vp-p H. rate
REC 1.0 Vp-p H. rate
D503 MA132WK
D507 MA133
Q536
Q501
Q503
Q502
R613 10K
Q536 UN9113
Q501–Q503 2SA1577(QR)
IC502 TL8808F
Q510 2SC4617(QRS)
Q511 2SA1774(QRS)
IC502
2fc
IHD
NC GND Vcc
R652 1H DL SIG LEVEL
Q511
Q510
LPF 502
Q530 2SA1774(QRS)
Q508,Q509 2SC4617(QRS)
IC504 MM1031XM
IC504
D506 MA133
Q530
Q508
Q509
R651 EE BURST LEVEL
EE 5V
TP503 VIDEO OUT
REC/PB 2.0 Vp-p H. rate
Q506
Q507
Q537
Q506,Q507 FMU1
Q537 DTC144EE
RESET
R616 1K
D503 MA141WK
IC503 TC4S81F
Q535 UN9111
Q535
Q534
Q532
Q538
Q539
Q540
REC 0.4 Vp-p H. rate
Q538,Q539 DTC144EE
Q532 2SC4617(QRS)
Q534 2SC4617(R)
Q540 2SC4617(QRS)
D501 MA132WK
From REGULATOR
RY1 GND
RY3 GND
REG 8V
REG 5V
From/To MECHACON
MY2 VEE
MY3 VREC
MY1 VPB
MY4 EP/SP
MY5 V ALL MUTE
YM6 Y OUT
MY7 VREC MUTE
From OPERATION UNIT <DECK>, CN1
CN5
DUB
From CPU, CN11
CN14
CHARACTER
To ELECTRONIC VIEWFINDER
CN12
CHARACTER
VIDEO GND
Y OUT
GND
REG 8V
To 0 2 JACK, CN2
CN19
VIDEO OUT
VIDEO GND
From 1 2 VIDEO, CN21
CN15
NC
Y
COLOR
GND
GND
From/To SERVO
SY5 ALM ON
YS4 C SYNC
SY2 V PULSE
SY3 V FF
SY1 V PULSE ON
D
E
F
G
I
J
K
L

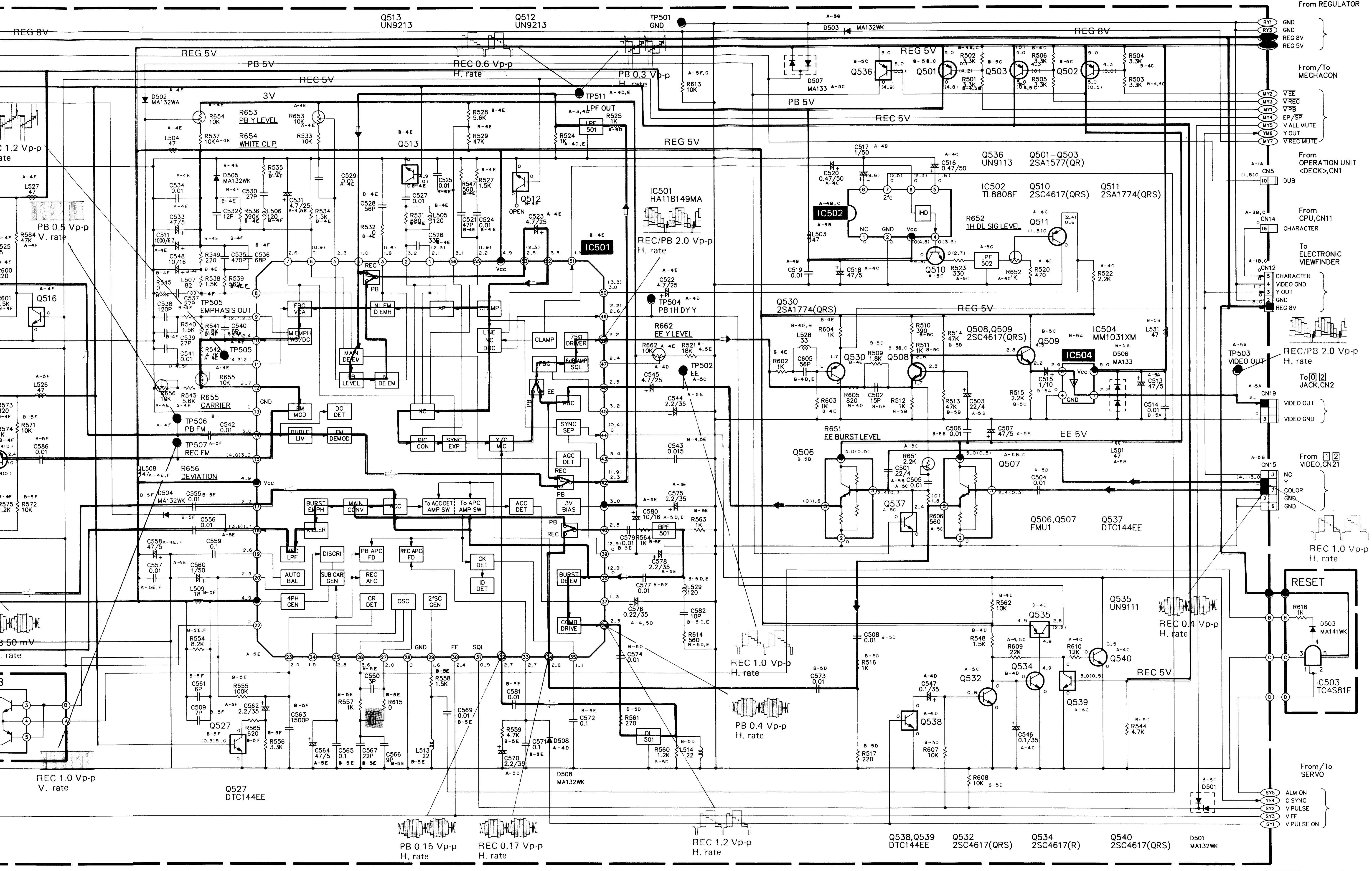
ode, VHS mode.
VHS mode.
palyback, the
hesis.

- **Shaded (▨) parts are critical for safety.**
  Replace only with specified part numbers.

- Waveform
  REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.

- Address of chip parts A-1D — Address
  A : Discrete parts side
  B : Chip parts side

- SIGNAL PATH
  ⬅ REC
  ⇦ PB
  ◁ REC & PB



Q513 UN9213
Q512 UN9213
TP501 GND
REG 8V
REG 5V
PB 5V
REC 5V
REC 0.6 Vp-p H. rate
PB 0.3 Vp-p H. rate
TP511
LPF OUT
LPF 501
3V
R653 PB Y LEVEL
R654 WHITE CLIP
IC501 HA118149MA
REC/PB 2.0 Vp-p H. rate
TP504 PB 1H DY Y
R662 EE Y LEVEL
TP502 EE
TP505 EMPHASIS OUT
R655 CARRIER
TP506 PB FM
TP507 REC FM
R656 DEVIATION
PB 0.5 Vp-p V. rate
C 1.2 Vp-p
REC 1.0 Vp-p V. rate
Q516
Q527 DTC144EE
FBC VCA
NL EM DEMH
AF
CLAMP
LINE NC DOC
MAIN DEEM
PB LEVEL
NL DEEM
MEMPH WC/DC
FM MOD
DO DET
DUBLE LIM
FM DEMOD
NC
PIC CON
SYNC EXP
Y/C MIX
759 DRIVER
FBC
64B AMP SQL
AGC
SYNC SEP
AGC DET
BURST EMPH
MAIN CONV
ACC
To ACC DET AMP SW
To APC AMP SW
ACC DET
3V BIAS
KILLER
REC LPF
DISCRI
PB APC FD
REC APC FD
CK DET
ID DET
AUTO BAL
SUB CAR GEN
REC AFC
BURST DEEM
4PH GEN
CR DET
OSC
2fSC GEN
COMB DRIVE
BPF 501
DL 501
X501
D502 MA132WA
D504 MA132WK
D505 MA132WK
D508 MA132WK
PB 0.15 Vp-p H. rate
REC 0.17 Vp-p H. rate
REC 1.2 Vp-p H. rate
REC 1.0 Vp-p H. rate
PB 0.4 Vp-p H. rate
From REGULATOR
GND
GND
REG 8V
REG 5V
D503 MA132WK
D507 MA133
Q536
Q501
Q503
Q502
From/To MECHACON
V̄EE
V̄REC
V̄PB
EP/S̄P̄
V ALL MUTE
Y OUT
V̄REC MUTE
Q536 UN9113
Q501–Q503 2SA1577(QR)
IC502 TL8808F
Q510 2SC4617(QRS)
Q511 2SA1774(QRS)
IC502
IHD
R652 1H DL SIG LEVEL
Q511
Q510
LPF 502
From OPERATION UNIT <DECK>,CN1
CN5
DUB
From CPU,CN11
CN14
CHARACTER
To ELECTRONIC VIEWFINDER
CN12
CHARACTER
VIDEO GND
Y OUT
GND
REG 8V
Q530 2SA1774(QRS)
Q508,Q509 2SC4617(QRS)
IC504 MM1031XM
D506 MA133
Q530
Q508
Q509
IC504
TP503 VIDEO OUT
REC/PB 2.0 Vp-p H. rate
To ⓪② JACK,CN2
CN19
VIDEO OUT
VIDEO GND
R651 EE BURST LEVEL
EE 5V
Q506
Q507
Q537
Q506,Q507 FMU1
Q537 DTC144EE
From ①② VIDEO,CN21
CN15
NC
Y
COLOR
GND
GND
REC 1.0 Vp-p H. rate
RESET
D503 MA141WK
IC503 TC4S81F
REC 0.4 Vp-p H. rate
Q535 UN9111
Q535
Q534
Q532
Q538
Q539
Q540
REC 5V
From/To SERVO
ALM ON
C SYNC
V PULSE
V FF
V PULSE ON
D501 MA132WK
Q538,Q539 DTC144EE
Q532 2SC4617(QRS)
Q534 2SC4617(R)
Q540 2SC4617(QRS)

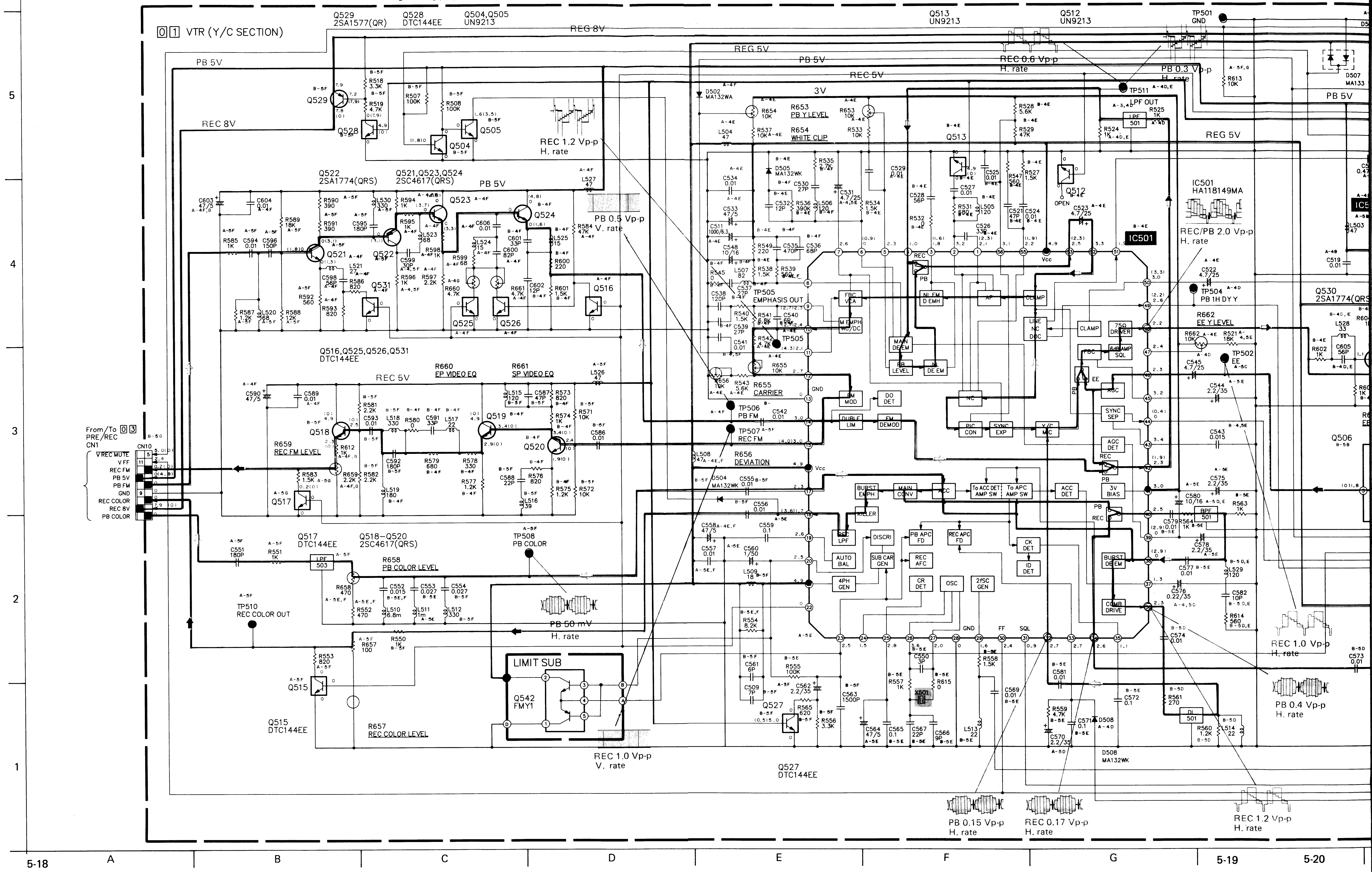
D E F G I J K L

5.11 Y/C SCHEMATIC DIAGRAM

- Voltage REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.
  *Where voltage differ between recording and palyback, the voltage during playback is shown in parenthesis.

- **Shaded (▨) parts are critical for safety. Replace only with specified part numbers.**

- Waveform
  REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.

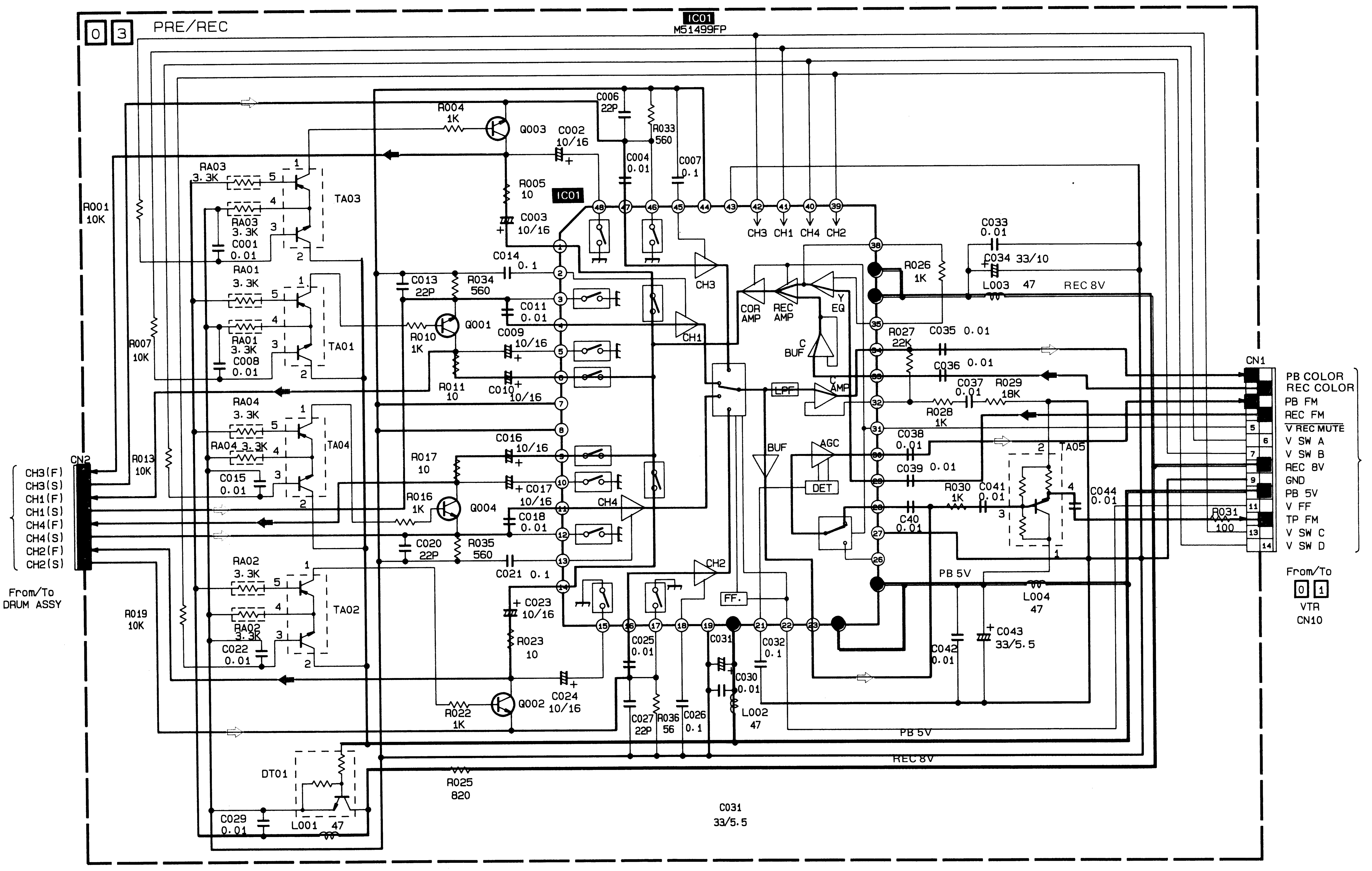


01 VTR (Y/C SECTION)
Q529 2SA1577(QR)
Q528 DTC144EE
Q504,Q505 UN9213
Q513 UN9213
Q512 UN9213
TP501 GND
REG 8V
REG 5V
PB 5V
REC 5V
REC 8V
3V
REC 0.6 Vp-p H. rate
PB 0.3 Vp-p H. rate
REC 1.2 Vp-p H. rate
TP511
LPF OUT
D507 MA133
D502 MA132WA
R653 PB Y LEVEL
R654 WHITE CLIP
Q522 2SA1774(QRS)
Q521,Q523,Q524 2SC4617(QRS)
PB 0.5 Vp-p V. rate
IC501 HA118149MA
REC/PB 2.0 Vp-p H. rate
TP505 EMPHASIS OUT
TP504 PB 1H DY Y
R662 EE Y LEVEL
TP502 EE
Q530 2SA1774(QRS)
Q516,Q525,Q526,Q531 DTC144EE
R660 EP VIDEO EQ
R661 SP VIDEO EQ
R655 CARRIER
TP506 PB FM
TP507 REC FM
R656 DEVIATION
R659 REC FM LEVEL
From/To 03 PRE/REC CN1
CN10
VREC MUTE
V FF
REC FM
PB 5V
PB FM
GND
REC COLOR
REC 8V
PB COLOR
Q517 DTC144EE
Q518–Q520 2SC4617(QRS)
TP508 PB COLOR
R658 PB COLOR LEVEL
LPF 503
TP510 REC COLOR OUT
PB 50 mV H. rate
LIMIT SUB
Q542 FMY1
Q515 DTC144EE
R657 REC COLOR LEVEL
REC 1.0 Vp-p V. rate
Q527 DTC144EE
X501
D508 MA132WK
REC 1.0 Vp-p H. rate
PB 0.4 Vp-p H. rate
PB 0.15 Vp-p H. rate
REC 0.17 Vp-p H. rate
REC 1.2 Vp-p H. rate
FBC VCA
NL EM D EMH
AF
CLAMP
M EMPH NC/DC
MAIN DE EM
PB LEVEL
NL DE EM
LINE NC DOC
75Ω DRIVER
6dB AMP SQL
FBC
AGC
NC
FM MOD
DO DET
DUBLE LIM
FM DEMOD
PIC CON
SYNC EXP
Y/C MIX
SYNC SEP
AGC DET
BURST EMPH
MAIN CONV
ACC
To ACC DET AMP SW
To APC AMP SW
ACC DET
3V BIAS
KILLER
REC LPF
DISCRI
PB APC FD
REC APC FD
CK DET
ID DET
AUTO BAL
SUB CAR GEN
REC AFC
4PH GEN
CR DET
OSC
2fSC GEN
BURST DE EM
COMB DRIVE
BPF 501
DL 501
LPF 501
6
5
4
3
2
1
A
B
C
D
E
F
G

5.12 PRE/REC SCHEMATIC DIAGRAM

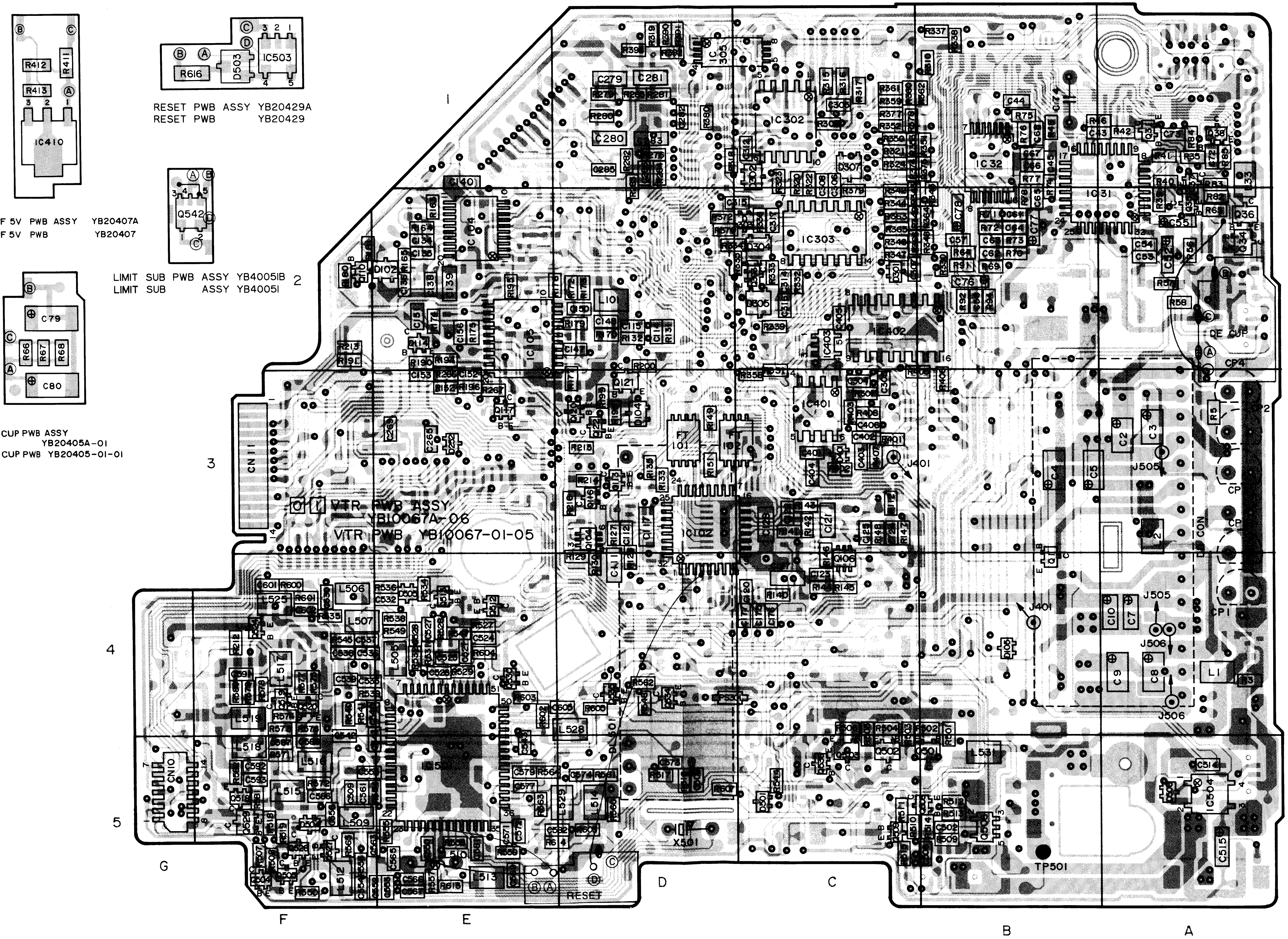
NOTE: This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

● SIGNAL PATH
⬅ REC
⇦ PB



03 PRE/REC
IC01 M51499FP
R004 1K
Q003
C002 10/16
C006 22P
R033 560
C004 0.01
C007 0.1
R005 10
C003 10/16
RA03 3.3K
TA03
C001 0.01
RA01 3.3K
TA01
C008 0.01
RA04 3.3K
TA04
C015 0.01
RA02 3.3K
TA02
C022 0.01
R001 10K
R007 10K
R013 10K
R019 10K
C014 0.1
C013 22P
R034 560
C011 0.01
Q001
C009 10/16
R010 1K
R011 10
C010 10/16
C016 10/16
R017 10
C017 10/16
Q004
R016 1K
C018 0.01
C020 22P
R035 560
C021 0.1
C023 10/16
R023 10
C024 10/16
Q002
R022 1K
R025 820
DT01
C029 0.01
L001 47
CH3 CH1 CH4 CH2
CH3
CH1
CH4
CH2
COR AMP
REC AMP
Y EQ
C BUF
LPF
C AMP
BUF
AGC
DET
FF.
C025 0.01
C027 22P
R036 56
C026 0.1
C031
C030 0.01
L002 47
C032 0.1
C033 0.01
C034 33/10
L003 47
REC 8V
R026 1K
R027 22K
C035 0.01
C036 0.01
C037 0.01
R029 18K
R028 1K
C038 0.01
C039 0.01
R030 1K
C041 0.01
TA05
C40 0.01
C044 0.01
R031 100
PB 5V
L004 47
C042 0.01
C043 33/5.5
PB 5V
REC 8V
C031 33/5.5
CN2
CH3(F)
CH3(S)
CH1(F)
CH1(S)
CH4(F)
CH4(S)
CH2(F)
CH2(S)
From/To DRUM ASSY
CN1
PB COLOR
REC COLOR
PB FM
REC FM
V REC MUTE
V SW A
V SW B
REC 8V
GND
PB 5V
V FF
TP FM
V SW C
V SW D
From/To 01 VTR CN10

5.13 VTR CIRCUIT BOARD



Ⓑ
Ⓒ
R412
R411
R413
Ⓐ
3 2 1
IC410

REF 5V PWB ASSY YB20407A
REF 5V PWB YB20407

Ⓒ 3 2 1
Ⓓ
Ⓑ Ⓐ
R616
D503
IC503
4 5

RESET PWB ASSY YB20429A
RESET PWB YB20429

Ⓐ Ⓑ
3 4 5
Q542
Ⓓ
1 2
Ⓒ

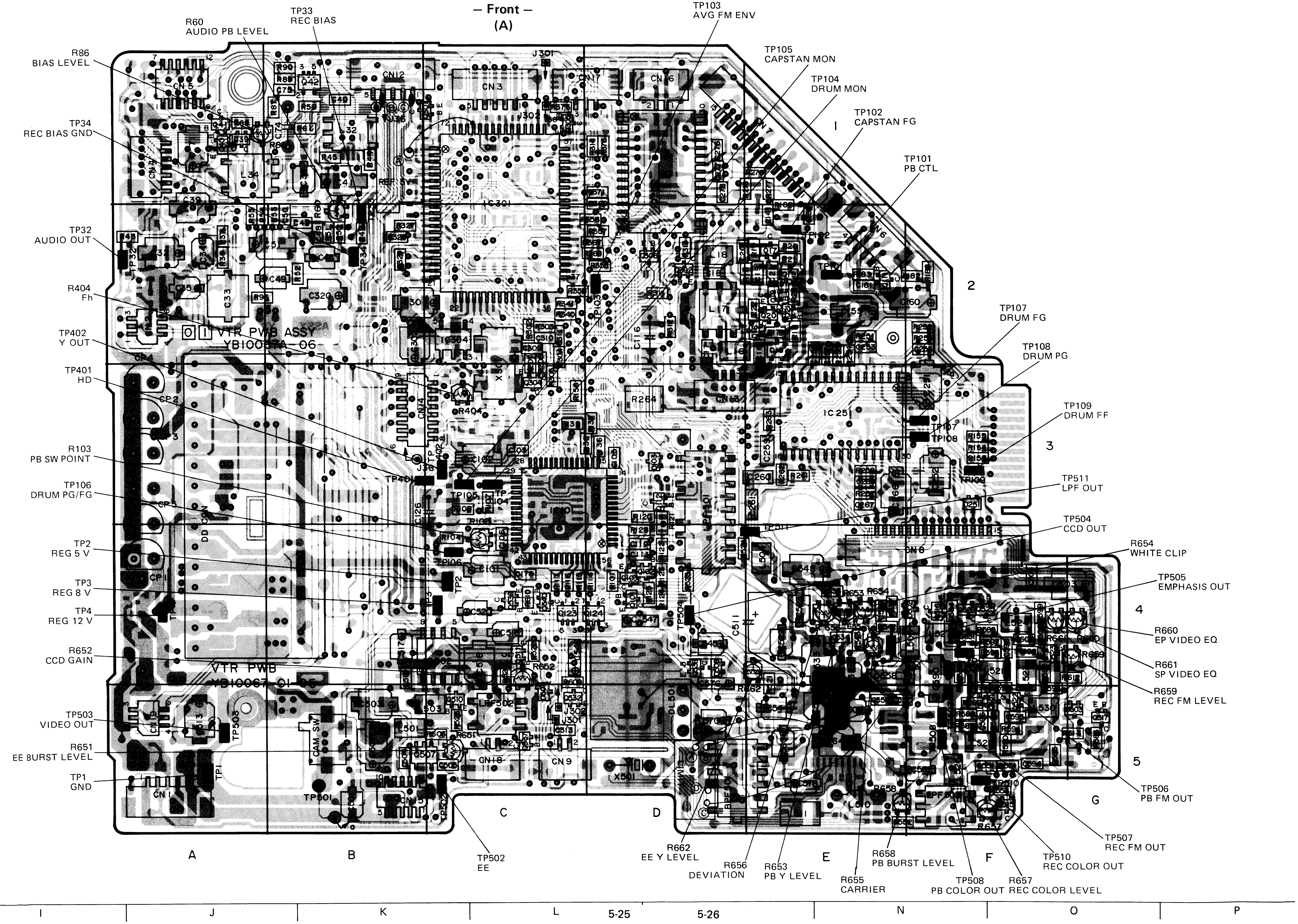
LIMIT SUB PWB ASSY YB40051B
LIMIT SUB ASSY YB40051I 2

Ⓑ
C79
Ⓒ
R66
R67
R68
Ⓐ
C80

DE CUP PWB ASSY YB20405A-01
DE CUP PWB YB20405-01-01

— Rear —
(B)

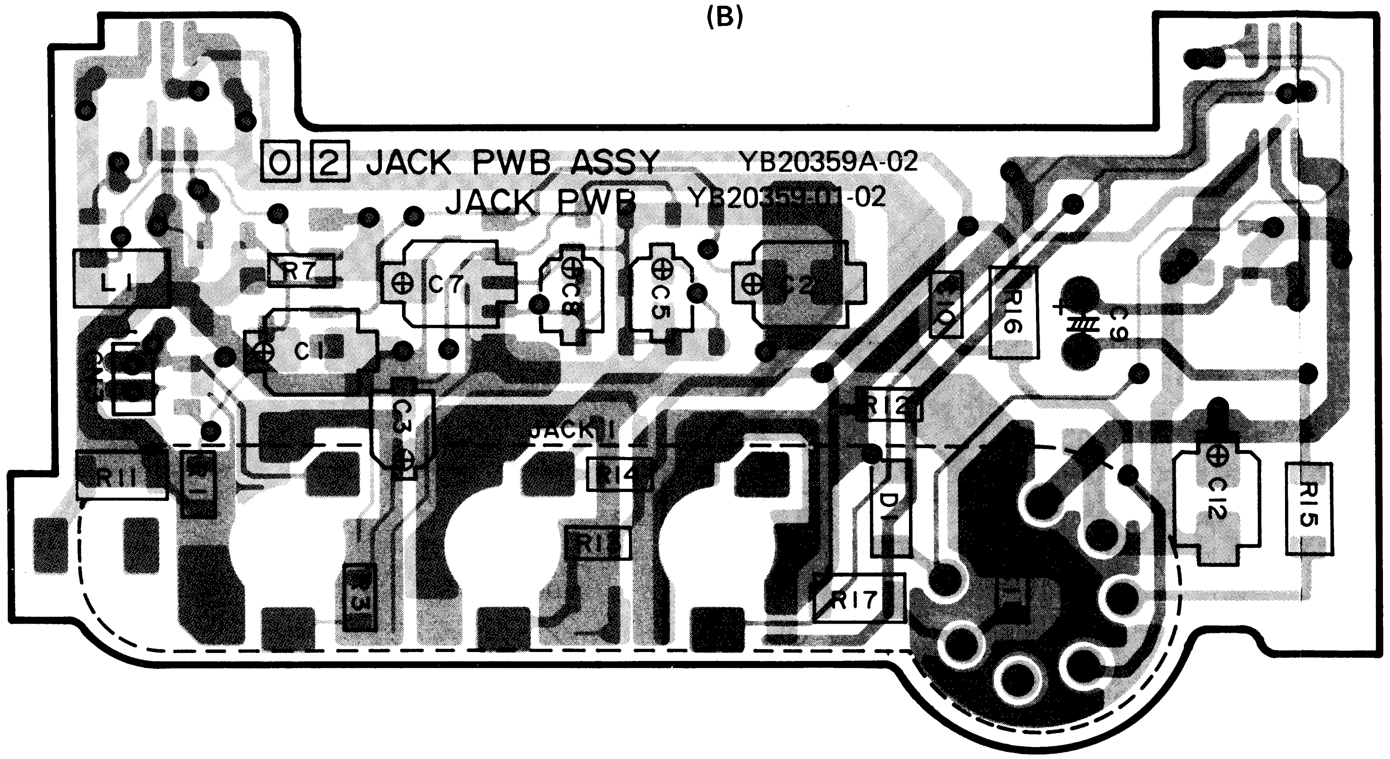
I
2
3
4
5
G
F
E
D
C
B
A
VTR PWB ASSY YB10067A-06
VTR PWB YB10067-01-05
CN11
CN10
IC302
IC303
IC305
IC32
IC31
IC401
IC402
IC403
IC504
J401
J505
J506
TP501
X501
DE CUP
CP4
CP1
CP2
L101
L1
L506
L507
L526
L531
RESET



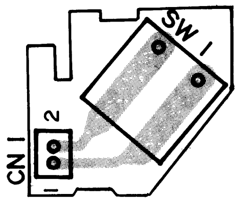
— Front —
(A)
R60
AUDIO PB LEVEL
TP33
REC BIAS
R86
BIAS LEVEL
TP34
REC BIAS GND
TP32
AUDIO OUT
R404
Fh
TP402
Y OUT
TP401
HD
R103
PB SW POINT
TP106
DRUM PG/FG
TP2
REG 5 V
TP3
REG 8 V
TP4
REG 12 V
R652
CCD GAIN
TP503
VIDEO OUT
R651
EE BURST LEVEL
TP1
GND
TP502
EE
TP103
AVG FM ENV
TP105
CAPSTAN MON
TP104
DRUM MON
TP102
CAPSTAN FG
TP101
PB CTL
TP107
DRUM FG
TP108
DRUM PG
TP109
DRUM FF
TP511
LPF OUT
TP504
CCD OUT
R654
WHITE CLIP
TP505
EMPHASIS OUT
R660
EP VIDEO EQ
R661
SP VIDEO EQ
R659
REC FM LEVEL
TP506
PB FM OUT
TP507
REC FM OUT
TP510
REC COLOR OUT
R657
REC COLOR LEVEL
TP508
PB COLOR OUT
R658
PB BURST LEVEL
R655
CARRIER
R653
PB Y LEVEL
R656
DEVIATION
R662
EE Y LEVEL
VTR PWB ASSY
YB10067A-06
VTR PWB
YB10067-01
1
2
3
4
5
A
B
C
D
E
F
G
I
J
K
L
N
O
P

5.14 JACK, TRIGGER & UPPER DRUM CIRCUIT BOARDS

– Rear –
(B)

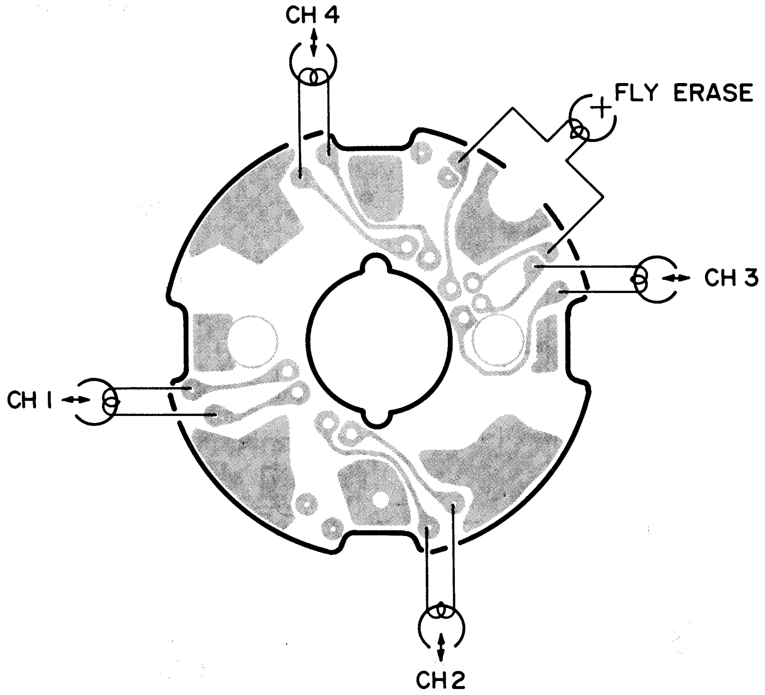

02 JACK PWB ASSY YB20359A-02
JACK PWB YB20359-01-02
L1
R7
C7
C8
C5
C2
C1
C3
JACK1
R14
R13
R10
R16
C9
R12
D1
R17
C12
R15
R11
R3

– TRIGGER –



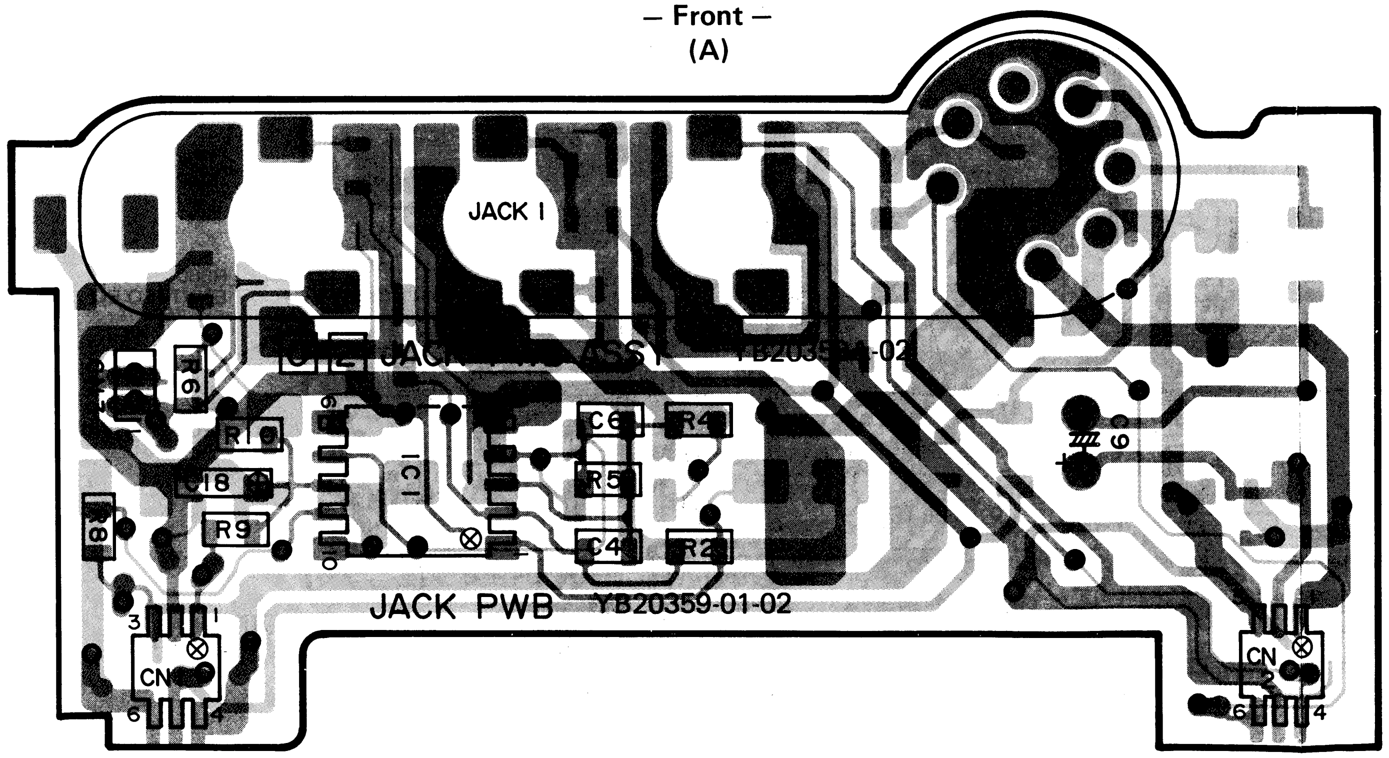
05 TRIGGER PWB ASSY YB20360A-01
TRIGGER PWB YB20360-01-01

– UPPER DRUM –


CH 4
FLY ERASE
CH 3
CH 1
CH2

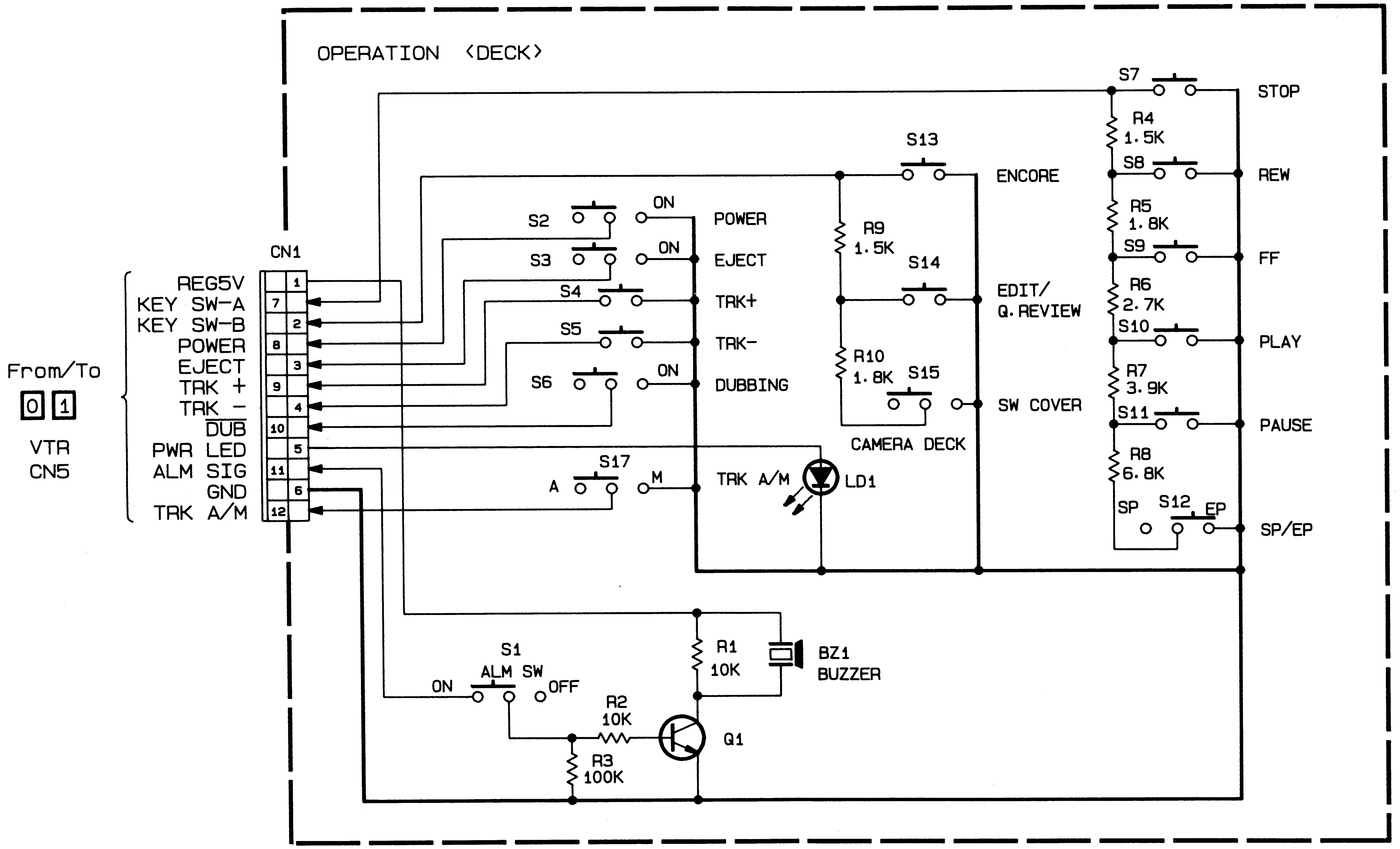
40 UPPER DRUM PWB
YDM3055

– Front –
(A)


JACK 1
02 JACK PWB ASSY YB20359A-02
R6
R1
C18
R9
R8
IC1
C6
R4
R5
C4
R2
C9
JACK PWB YB20359-01-02
CN1
3
1
6
4
CN2
6
4

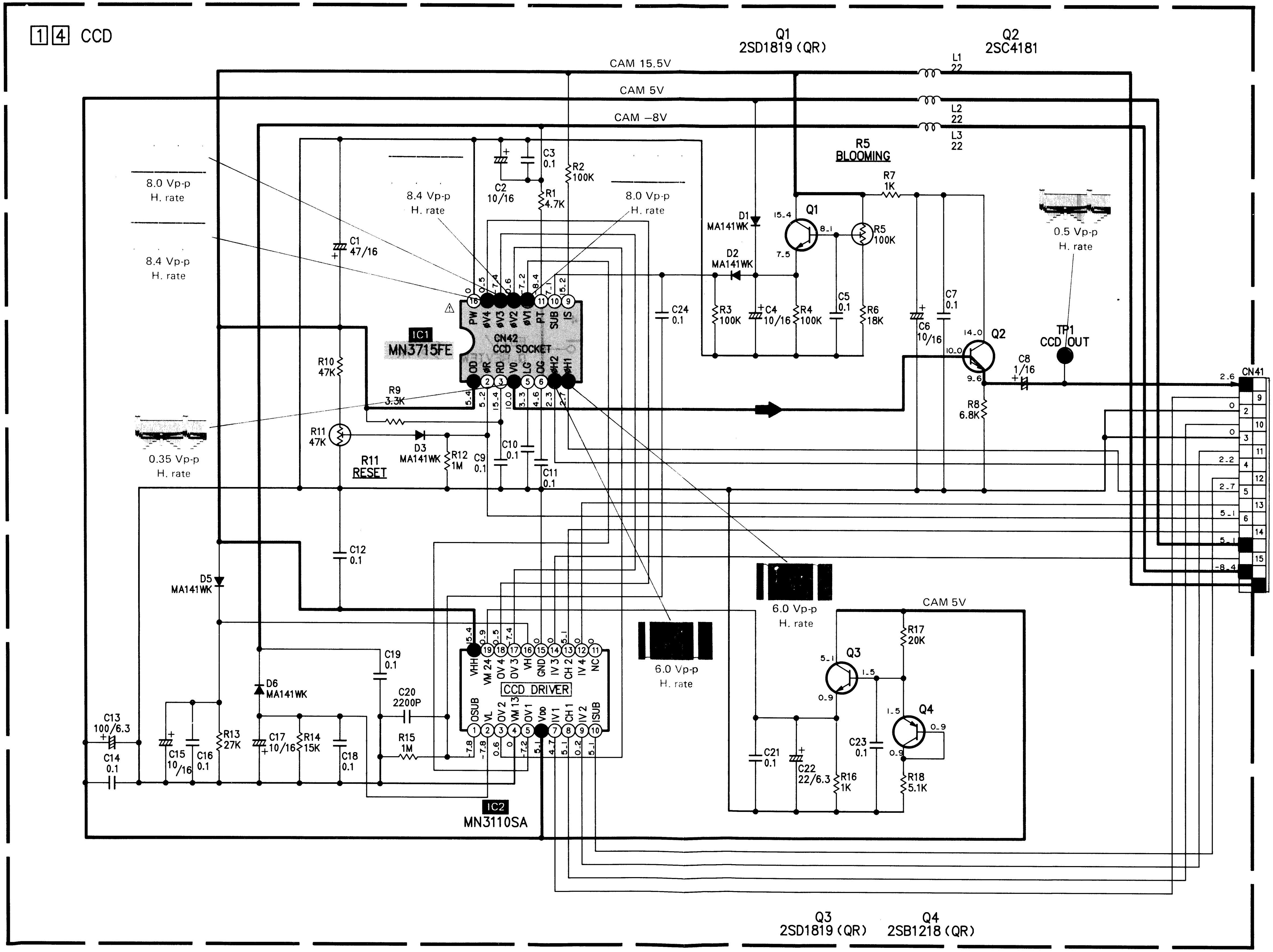
5.15 OPERATION (DECK) SCHEMATIC DIAGRAM

NOTE: This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.


OPERATION <DECK>
From/To
01
VTR
CN5
CN1
REG5V
KEY SW-A
KEY SW-B
POWER
EJECT
TRK +
TRK -
DUB
PWR LED
ALM SIG
GND
TRK A/M
1
7
2
8
3
9
4
10
5
11
6
12
S2
S3
S4
S5
S6
S17
ON
POWER
EJECT
TRK+
TRK-
DUBBING
A
M
TRK A/M
LD1
S13
ENCORE
R9
1.5K
S14
EDIT/
Q.REVIEW
R10
1.8K
S15
SW COVER
CAMERA DECK
S7
STOP
R4
1.5K
S8
REW
R5
1.8K
S9
FF
R6
2.7K
S10
PLAY
R7
3.9K
S11
PAUSE
R8
6.8K
SP
S12
EP
SP/EP
S1
ALM SW
OFF
R1
10K
BZ1
BUZZER
R2
10K
R3
100K
Q1

5.16 CCD SCHEMATIC DIAGRAM

- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.
- Shaded (▒) parts are critical for safety. Replace only with specified part numbers.
- Waveform : Measured as the gray scale or color bar pattern which light up brightly is shot in the rehersal mode.
- Address of chip parts
  A-1D
  Address
  A : Discrete parts side
  B : Chip parts side
- SIGNAL PATH
  ⬅ Y

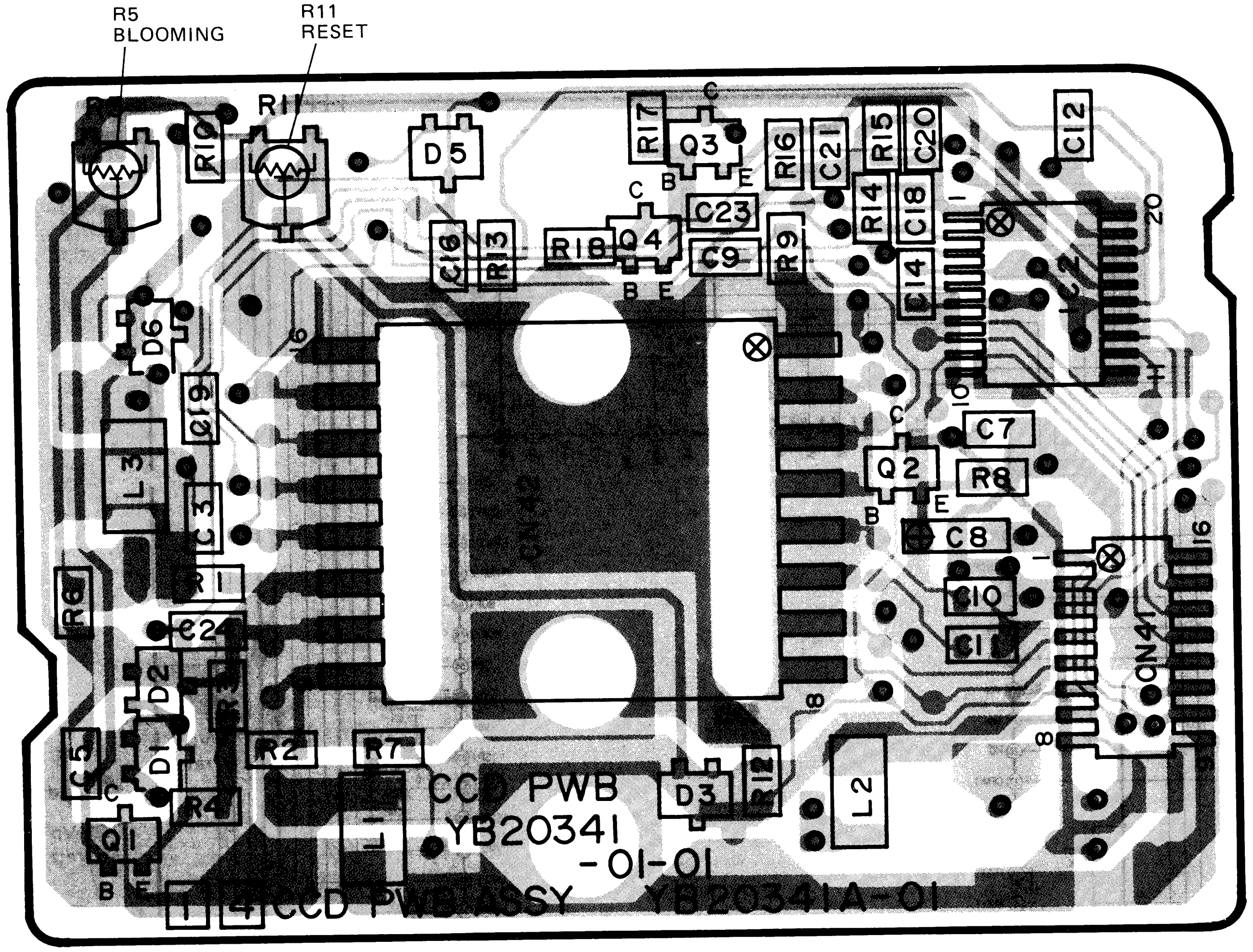


1 4 CCD
CAM 15.5V
CAM 5V
CAM -8V
Q1 2SD1819 (QR)
Q2 2SC4181
L1 22
L2 22
L3 22
R5 BLOOMING
R7 1K
R5 100K
R6 18K
R4 100K
R3 100K
C4 10/16
C5 0.1
C6 10/16
C7 0.1
C8 1/16
R8 6.8K
D1 MA141WK
D2 MA141WK
TP1 CCD OUT
0.5 Vp-p H. rate
8.0 Vp-p H. rate
8.4 Vp-p H. rate
8.4 Vp-p H. rate
8.0 Vp-p H. rate
0.35 Vp-p H. rate
6.0 Vp-p H. rate
6.0 Vp-p H. rate
C1 47/16
C2 10/16
C3 0.1
R1 4.7K
R2 100K
C24 0.1
IC1 MN3715FE
CN42 CCD SOCKET
PW ØV4 ØV3 ØV2 ØV1 PT SUB IS
OD ØR RD VO LG OG ØH2 ØH1
R10 47K
R9 3.3K
R11 47K
R11 RESET
D3 MA141WK
R12 1M
C9 0.1
C10 0.1
C11 0.1
C12 0.1
D5 MA141WK
D6 MA141WK
C13 100/6.3
C14 0.1
C15 10/16
C16 0.1
R13 27K
C17 10/16
R14 15K
C18 0.1
C19 0.1
C20 2200P
R15 1M
IC2 MN3110SA
CCD DRIVER
VHH VM 24 OV 4 OV 3 VH GND IV 3 CH 2 IV 4 NC
OSUB VL OV 2 VM 13 OV 1 VDD IV 1 CH 1 IV 2 ISUB
CAM 5V
R17 20K
Q3
Q4
C21 0.1
C22 22/6.3
R16 1K
C23 0.1
R18 5.1K
CN41
CCD OUT
V1
GND
CH 1
GND
V 2
H 2
VSUB
H 1
V 4
ØR
CH 2
CAM 5V
V 3
CAM -8V
CAM 15.5V
From/To 1 3 SSG CN33
Q3 2SD1819 (QR)
Q4 2SB1218 (QR)

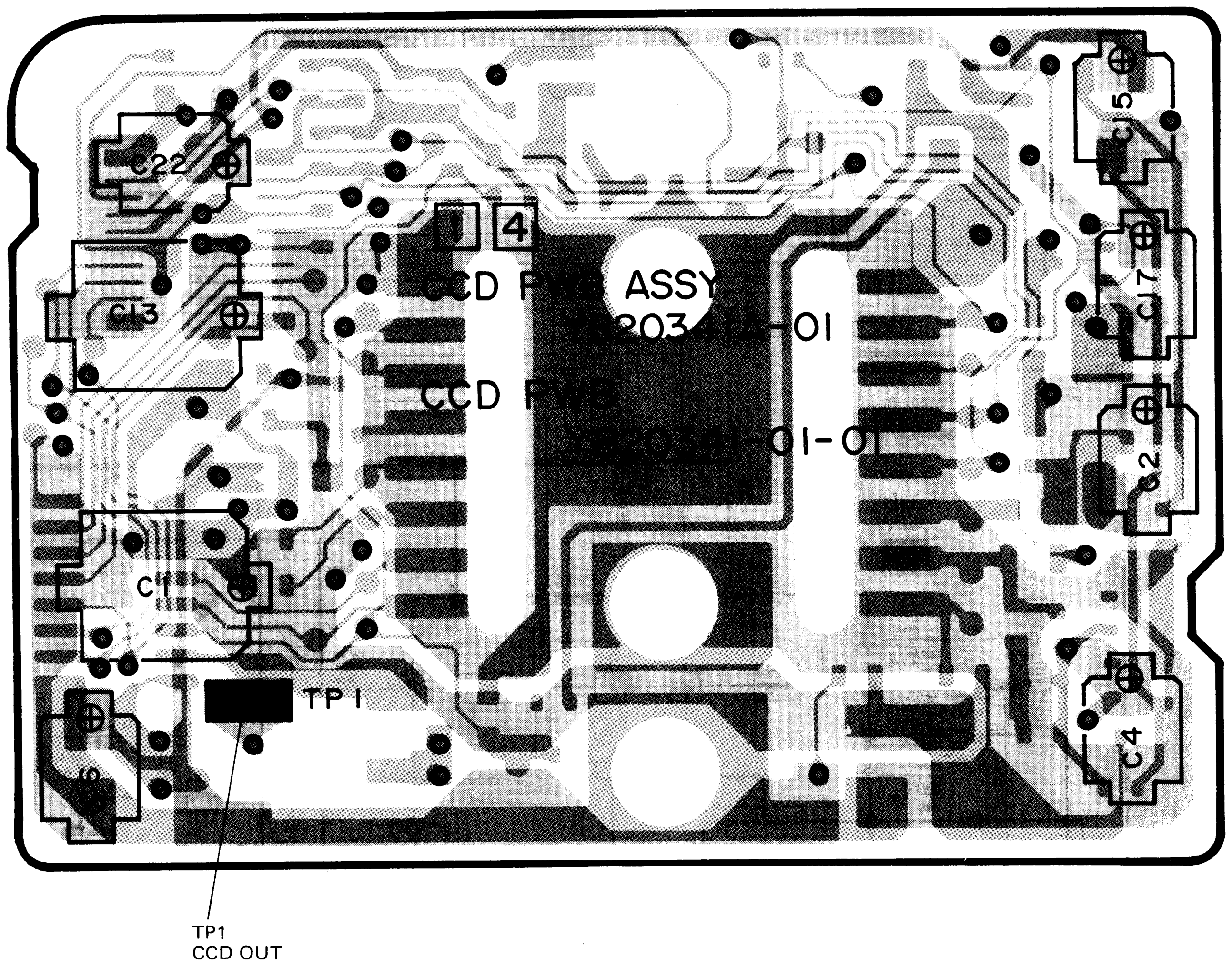
6
5
4
3
2
1
A
B
C
D
E
F
G
H

5.17 CCD CIRCUIT BOARD

– Rear –
(B)

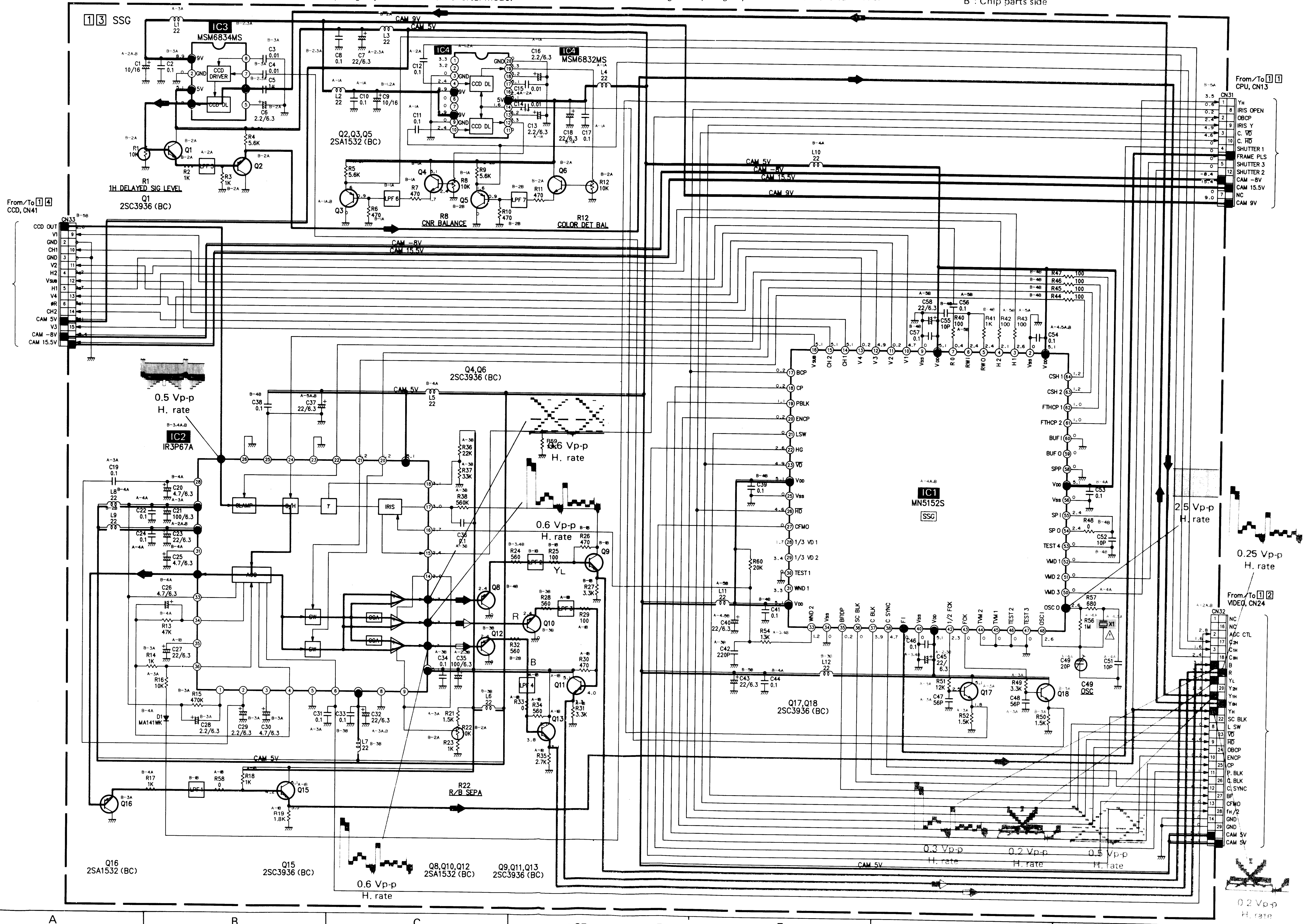

R5
BLOOMING
R11
RESET
R10
D5
R17
Q3
C
B
E
R16
C21
R15
C20
C12
R14
C18
C14
C16
R13
R18
Q4
C23
C9
R9
IC2
20
1
10
11
D6
C19
L3
C3
R1
R6
C24
D2
R3
C5
D1
R4
R2
R7
Q1
L1
CN42
16
8
Q2
C7
R8
C8
C10
C11
CN41
D3
R12
L2
CCD PWB
YB20341
-01-01
CCD PWB ASSY YB20341A-01

– Front –
(A)


C22
C13
C1
C15
C17
C2
C4
C6
TP1
CCD PWB ASSY
YB20341A-01
CCD PWB
YB20341-01-01
TP1
CCD OUT

5.18 SSG SCHEMATIC DIAGRAM

- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.
- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.
- Waveform : Measured as the grey scale pattern and color bar pattern which lighted up brightly is shot in the Rehersal mode.
- Address of chip parts
  A-1D
  1D — Address
  A : Discrete parts side
  B : Chip parts side
- SIGNAL PATH
  Y SIGNAL
  COLOR (R-Y/B-Y) SIGNAL
  R, R-Y SIGNAL
  B, B-Y SIGNAL



13 SSG
IC3 MSM6834MS
CCD DRIVER
CCD DL
IC4 MSM6832MS
Q1 2SC3936 (BC)
R1 1H DELAYED SIG LEVEL
Q2,Q3,Q5 2SA1532 (BC)
R8 CNR BALANCE
R12 COLOR DET BAL
Q4,Q6 2SC3936 (BC)
From/To 1 4 CCD, CN41
CN33
CCD OUT
V1
GND
CH1
GND
V2
H2
Vsub
H1
V4
ΦR
CH2
CAM 5V
V3
CAM -8V
CAM 15.5V
CAM 9V
CAM 5V
CAM 15.5V
From/To 1 1 CPU, CN13
CN31
YH
IRIS OPEN
OBCP
IRIS Y
C. VD
C. HD
SHUTTER 1
FRAME PLS
SHUTTER 3
SHUTTER 2
CAM -8V
CAM 15.5V
NC
CAM 9V
0.5 Vp-p H. rate
IC2 IR3P67A
CLAMP
S/H
T
IRIS
AGC
SW
GCA
LPF 1
LPF 2
LPF 3
LPF 4
LPF 5
LPF 6
LPF 7
0.6 Vp-p H. rate
0.6 Vp-p H. rate
0.6 Vp-p H. rate
YL
R
B
D1 MA141WK
R22 R/B SEPA
Q16 2SA1532 (BC)
Q15 2SC3936 (BC)
Q8,Q10,Q12 2SA1532 (BC)
Q9,Q11,Q13 2SC3936 (BC)
IC1 MN5152S SSG
Q17,Q18 2SC3936 (BC)
C49 OSC
X1
2.5 Vp-p H. rate
0.25 Vp-p H. rate
0.3 Vp-p H. rate
0.2 Vp-p H. rate
0.5 Vp-p H. rate
0.2 Vp-p H. rate
From/To 1 2 VIDEO, CN24
CN32
NC
NC
AGC CTL
C2H
C1H
C3H
B
R
YL
Y2H
Y1H
Y0H
YH
SC BLK
L SW
VD
HD
OBCP
ENCP
CP
P. BLK
C. BLK
C. SYNC
BF
CFMO
fH/2
GND
GND
CAM 5V
CAM 5V

6

5

4

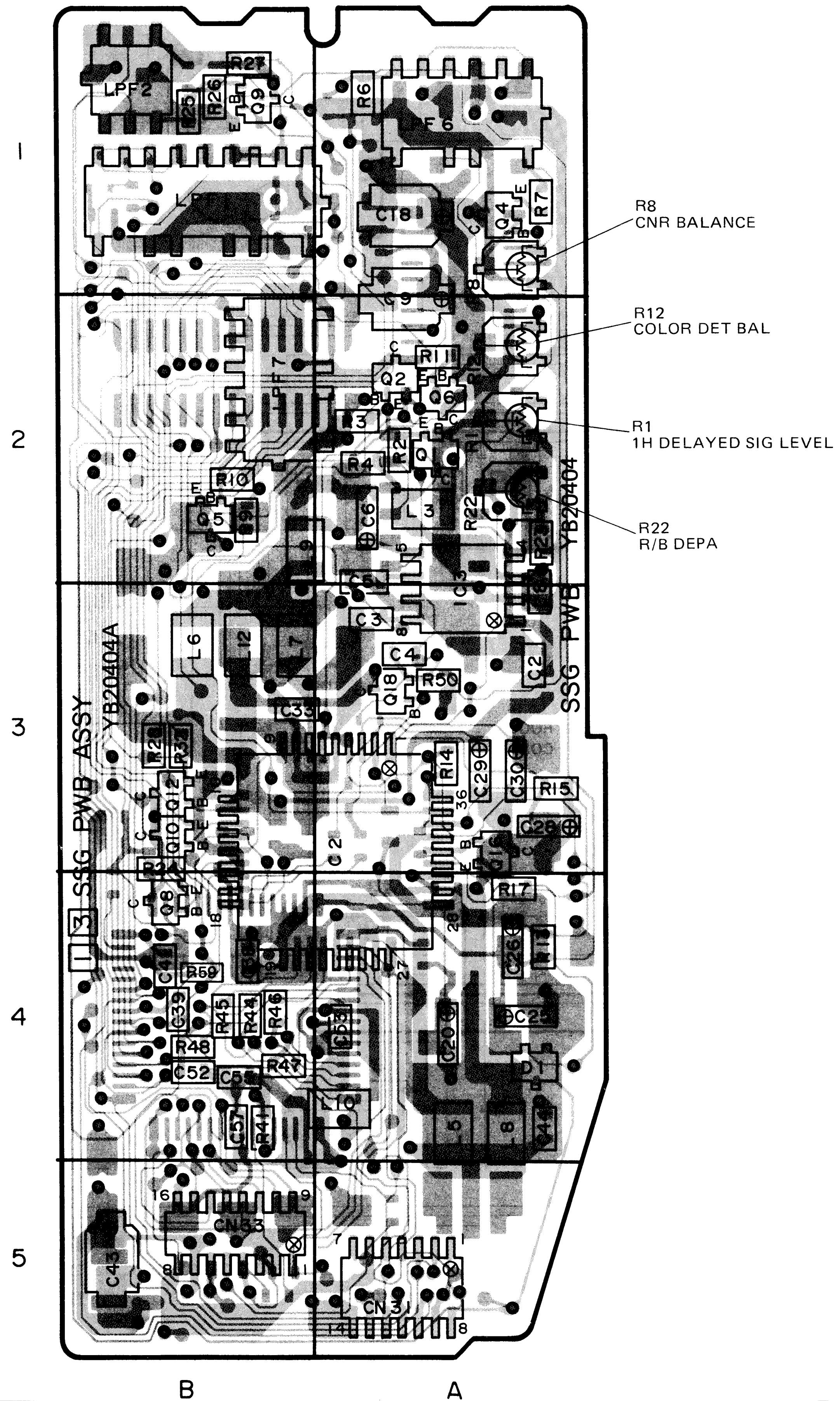
3

2

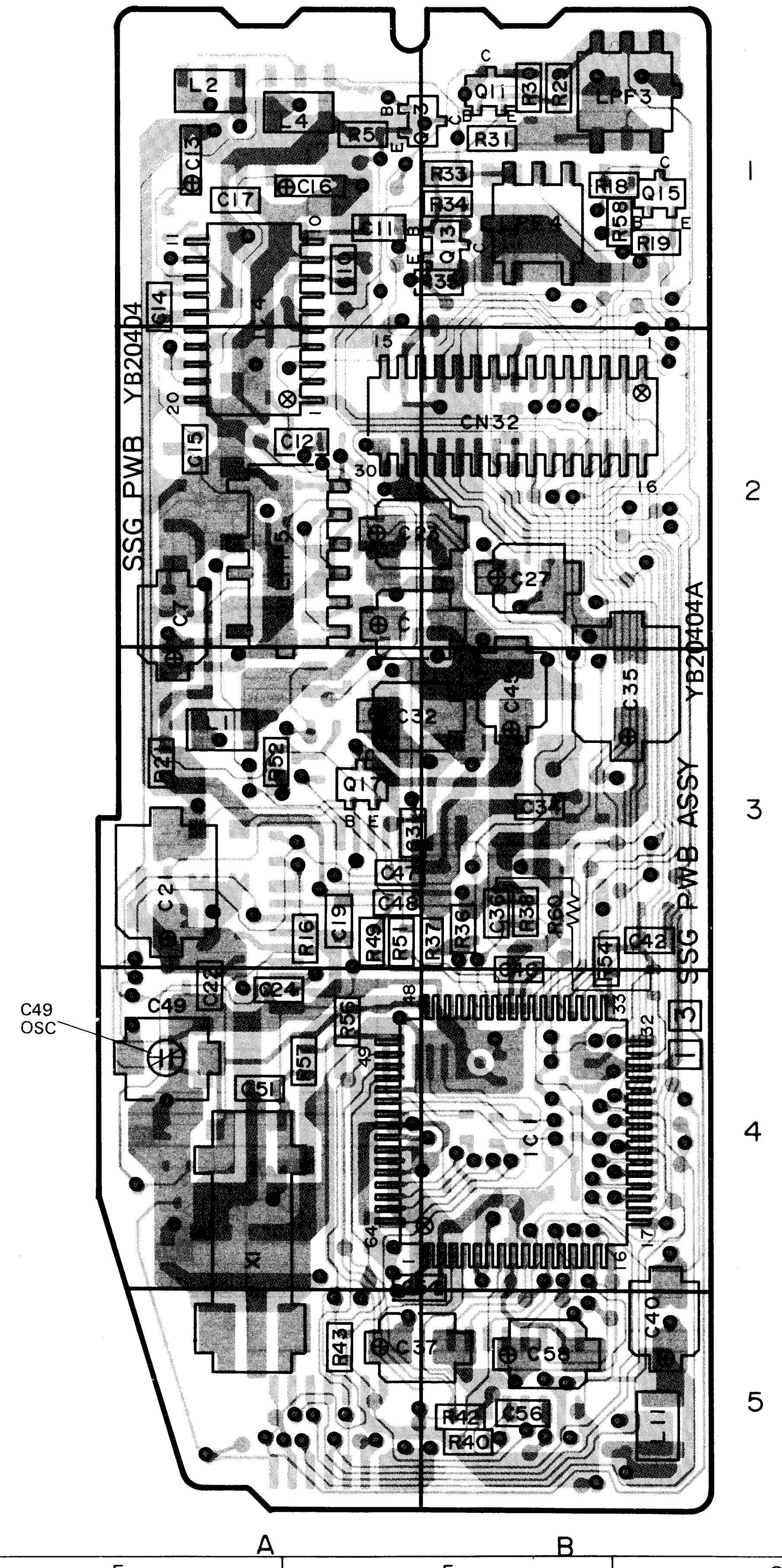
1

5.19 SSG CIRCUIT BOARD

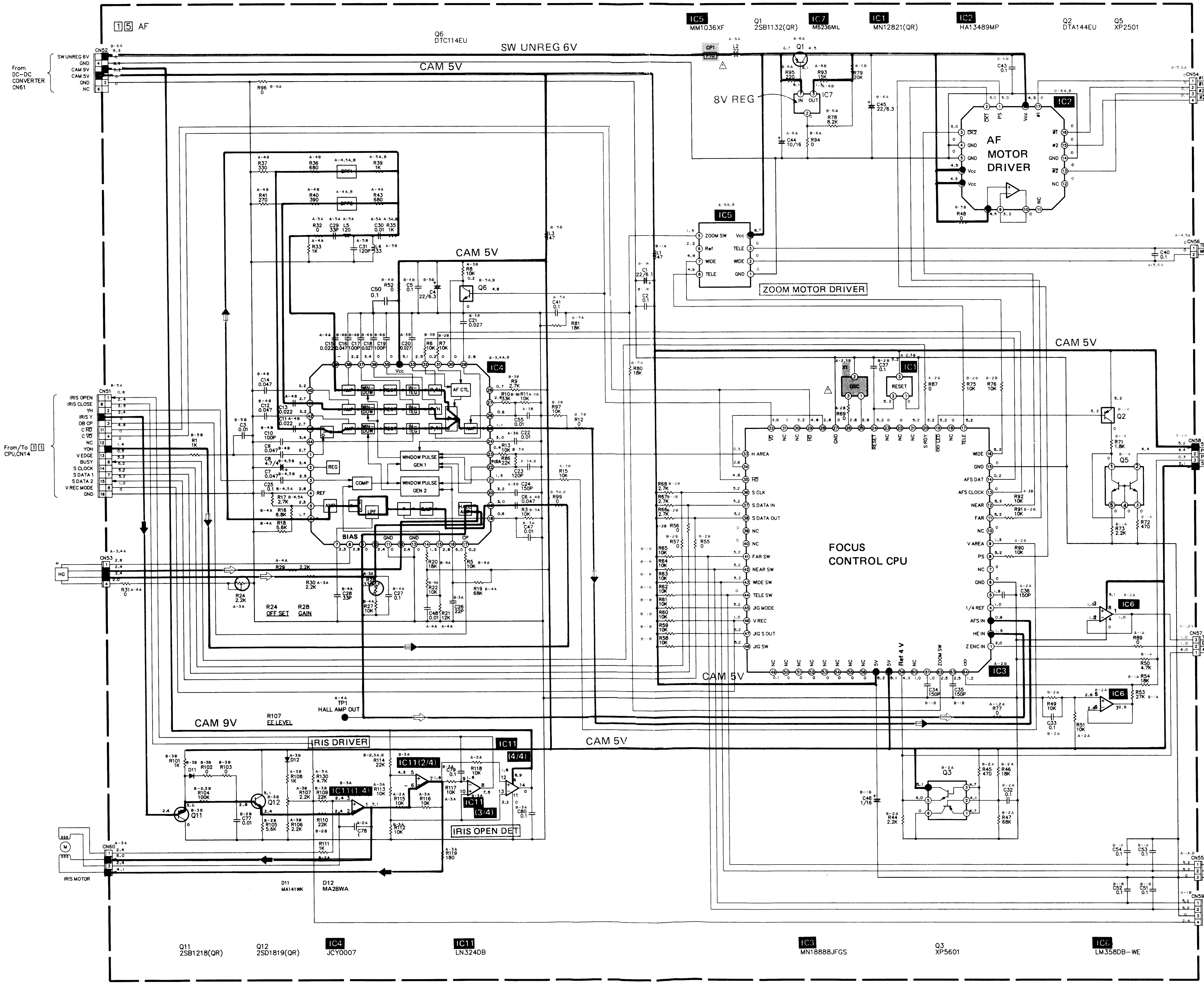
– Rear –
(B)


R8
CNR BALANCE
R12
COLOR DET BAL
R1
1H DELAYED SIG LEVEL
R22
R/B DEPA
SSG PWB YB20404
SSG PWB ASSY YB20404A
CN33
CN31
1
2
3
4
5
B
A

– Front –
(A)


C49
OSC
CN32
SSG PWB YB20404
SSG PWB ASSY YB20404A
1
2
3
4
5
A
B

5.20 AUTO FOCUS SCHEMATIC DIAGRAM

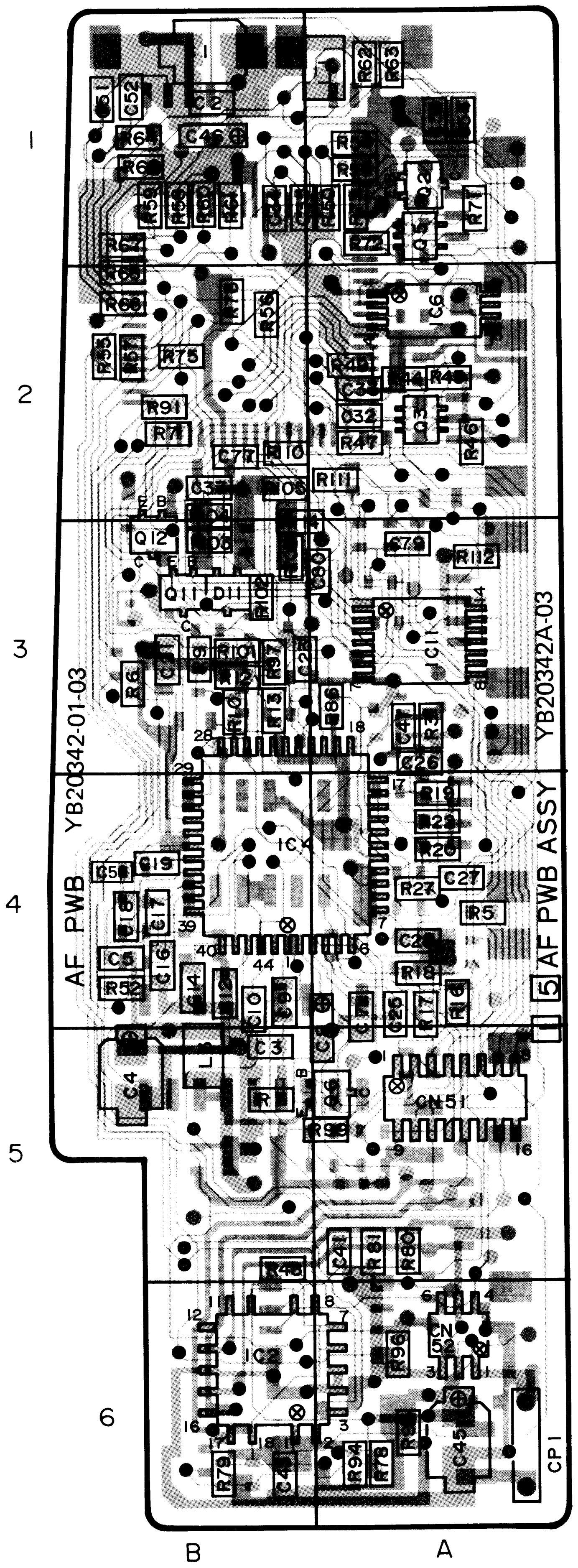

1 5 AF
From DC–DC CONVERTER CN61
SW UNREG 6V
GND
CAM 9V
CAM 5V
GND
NC
CN52
Q6 DTC114EU
SW UNREG 6V
CAM 5V
IC5 MM1036XF
Q1 2SB1132(QR)
IC7 M5236ML
IC1 MN12821(QR)
IC2 HA13489MP
Q2 DTA144EU
Q5 XP2501
8V REG
AF MOTOR DRIVER
AF MOTOR
CN54
ZOOM MOTOR
CN56
ZOOM MOTOR DRIVER
CAM 5V
IC4
BIAS
REG
COMP
WINDOW PULSE GEN 1
WINDOW PULSE GEN 2
AMP
LPF
AF CTL
From/To 1 1 CPU,CN14
CN51
IRIS OPEN
IRIS CLOSE
YH
IRIS Y
OB CP
C RD
C VD
NC
YOH
V EDGE
BUSY
S CLOCK
S DATA 1
S DATA 2
V REC MODE
GND
CN53
HG
R24 OFF SET
R28 GAIN
FOCUS CONTROL CPU
IC3
IC6
INF SENSOR
CN58
PHOTO DIODE
PHOTO TR
CN57
ZOOM ENCODER
TP1 HALL AMP OUT
R107 EE LEVEL
CAM 9V
CAM 5V
IRIS DRIVER
IC11 (4/4)
IC11 (2/4)
IC11 (1/4)
IC11 (3/4)
IRIS OPEN DET
Q11
Q12
Q3
CN60
IRIS MOTOR
D11 MA141WK
D12 MA28WA
ZOOM SWITCH
CN55
TELE
WIDE
GND
CN59
NEAR
FAR
GND
NC
From 1 7 JUNCTION CN2
Q11 2SB1218(QR)
Q12 2SD1819(QR)
IC4 JCY0007
IC11 LN324DB
IC3 MN18888JFGS
Q3 XP5601
IC6 LM358DB-WE

- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.
- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.
- Waveform : Measured as the grey scale pattern and color bar pattern which lighted up brightly is shot in the Rehersal mode.
- SIGNAL PATH
  - ◀ IRIS
  - ⇦ HALL
  - ◀ FORCUS
- Address of chip parts

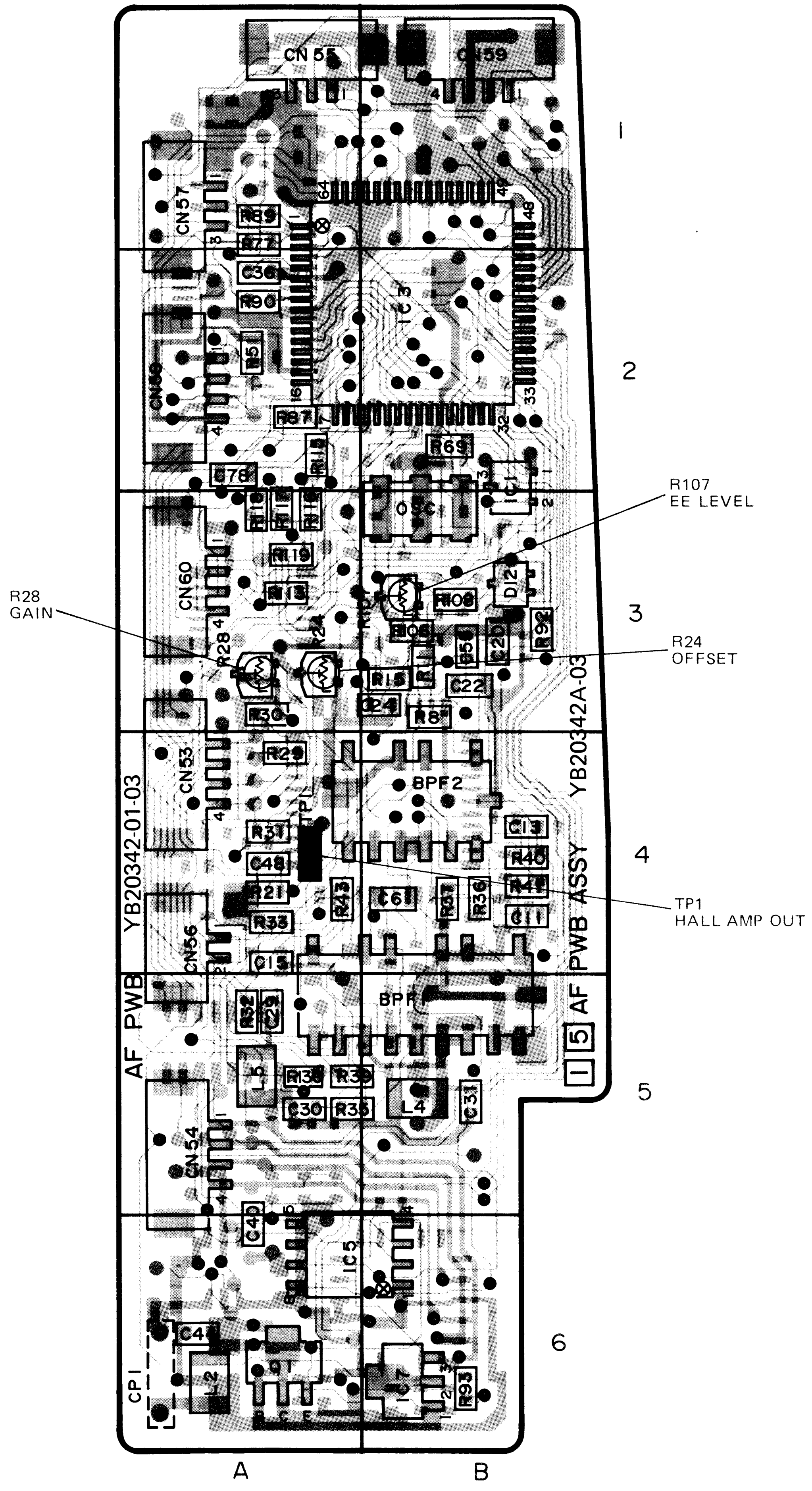
A-1D
└─Address
└─A : Discrete parts side
   B : Chip parts side

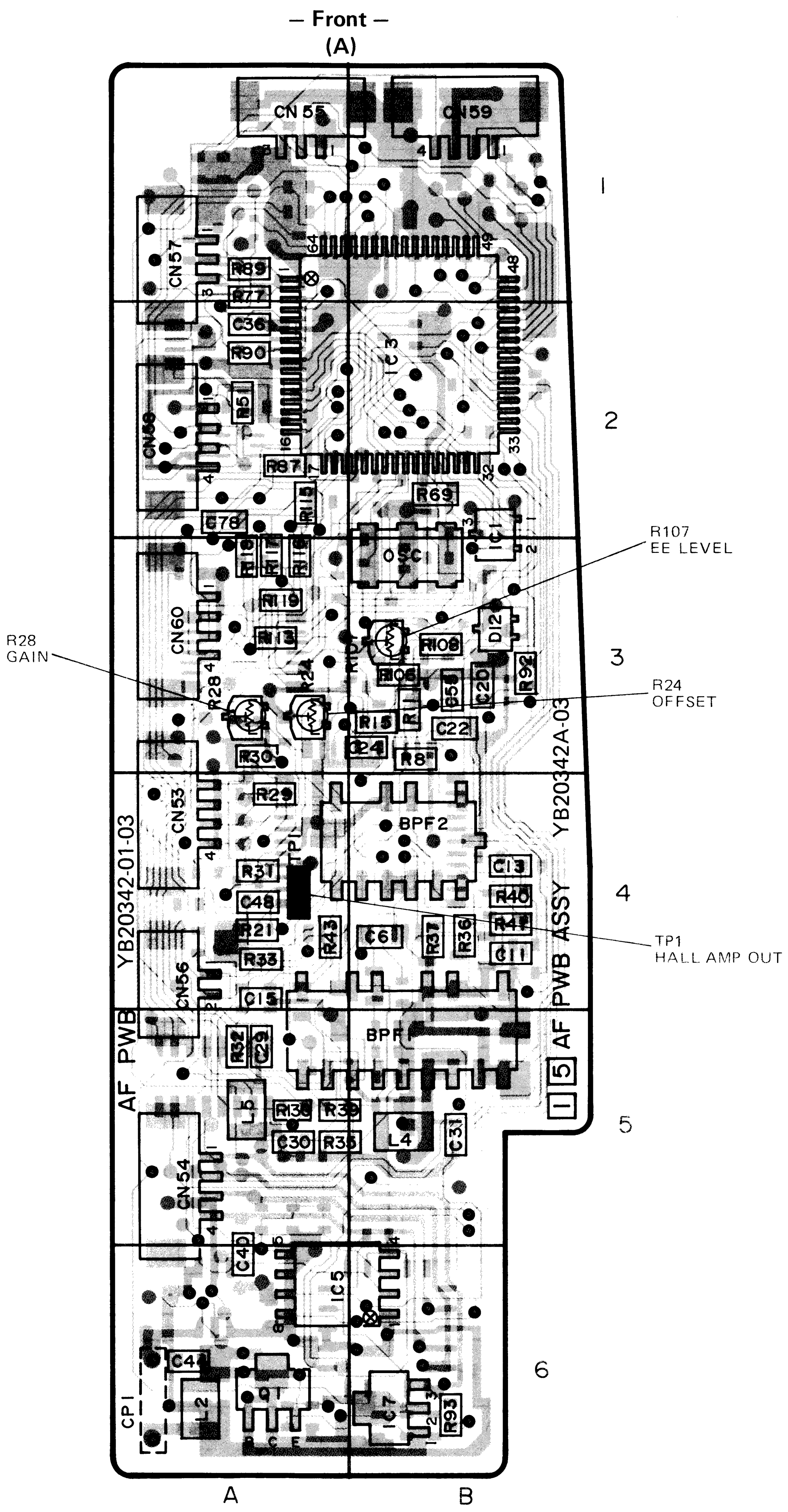
5.21 AUTO FOCUS CIRCUIT BOARD

— Rear —
(B)


1
2
3
4
5
6
B
A
AF PWB ASSY
YB20342-01-03
YB20342A-03
IC1
IC2
IC4
IC6
CN51
CN52
CP1
Q11
Q12
D11
C4
C3
C45
L1

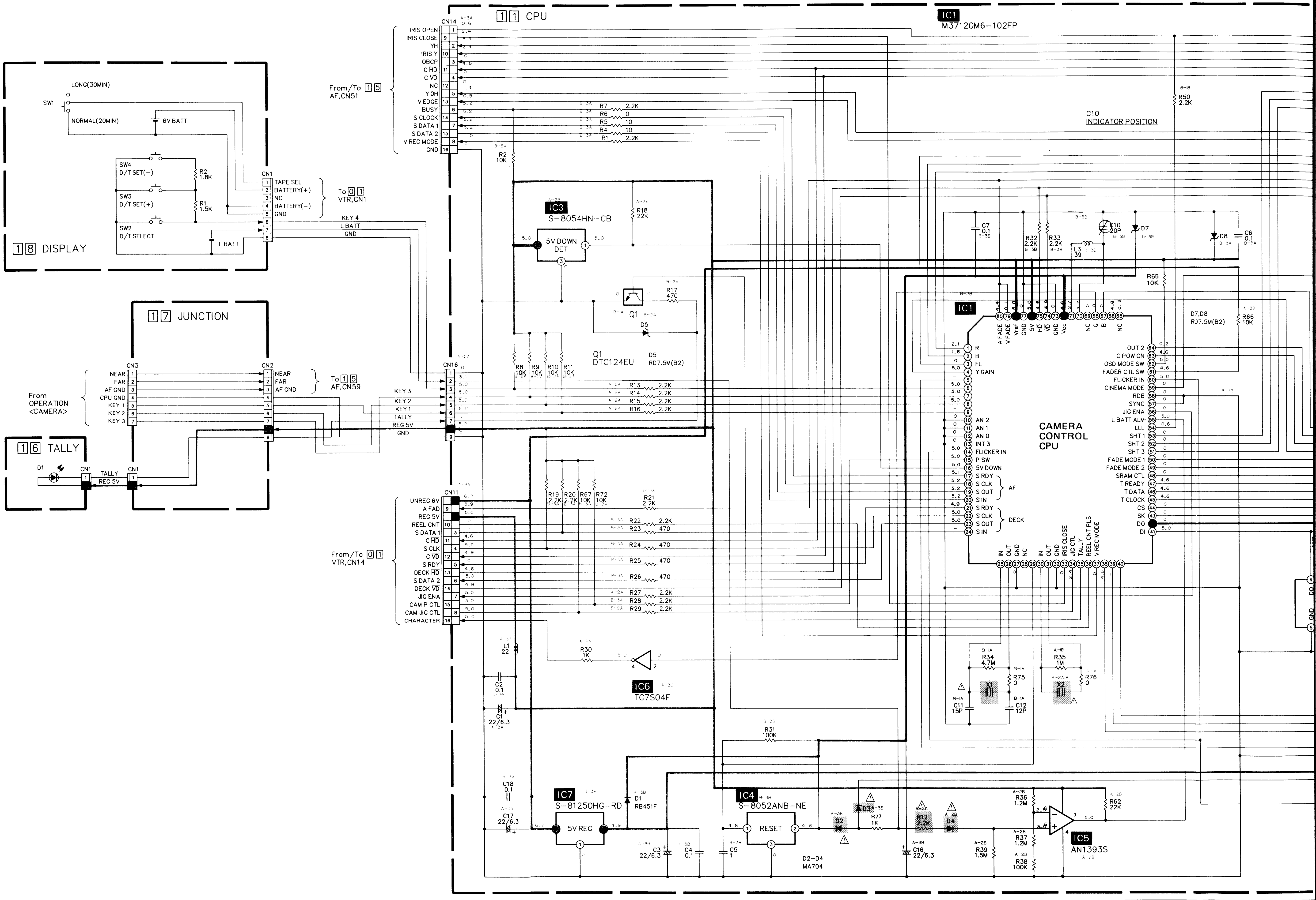
— Front —
(A)


1
2
3
4
5
6
A
B
AF PWB ASSY
YB20342-01-03
YB20342A-03
CN55
CN59
CN57
CN58
CN60
CN53
CN56
CN54
IC3
IC5
IC7
OSC1
BPF1
BPF2
Q1
D12
L2
L4
CP1
R107
EE LEVEL
R28
GAIN
R24
OFFSET
TP1
HALL AMP OUT

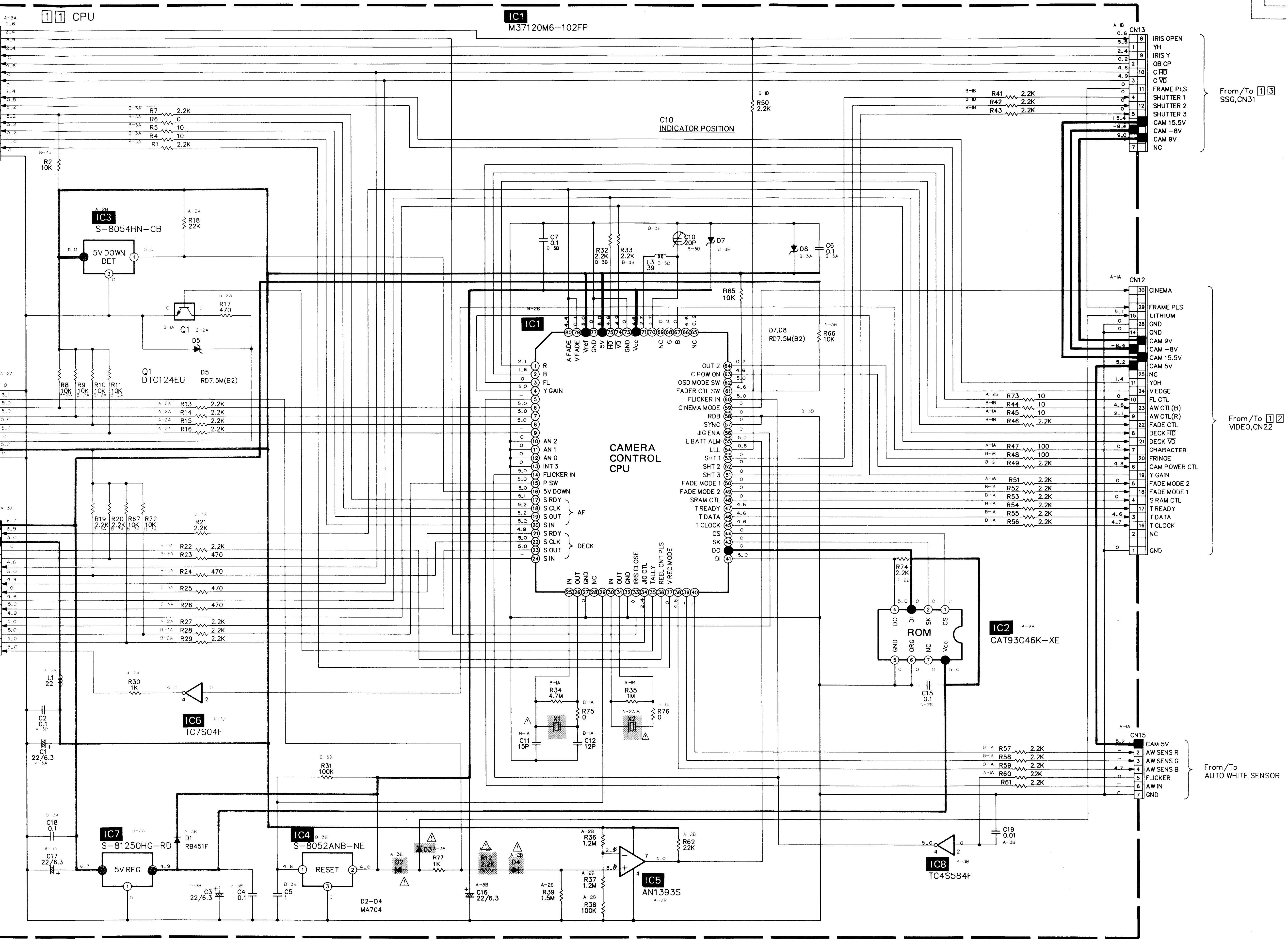

– Front –
(A)
CN55
CN59
CN57
CN58
CN60
CN53
CN56
CN54
IC3
IC1
IC5
IC7
OSC
BPF2
BPF1
L4
L5
L2
Q1
D12
CP1
R89
R77
C36
R90
R97
R69
C78
R119
R113
R108
R106
R28
R24
R15
C24
C22
R8
R30
R29
R31
C48
R21
R33
R43
C61
R37
R36
C13
R40
R41
C11
C15
R32
C29
R130
R39
C30
R35
C31
C40
C44
R93
C20
R92
TP1
YB20342-01-03
YB20342A-03
AF PWB ASSY
AF PWB
1 5
R107
EE LEVEL
R28
GAIN
R24
OFFSET
TP1
HALL AMP OUT
1
2
3
4
5
6
A
B

5.22 CPU, DISPLAY, JUNCTION & TALLY SCHEMATIC DIAGRAM

- **Shaded (▨) parts are critical for safety. Replace only with specified part numbers.**
- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.


1 1 CPU
IC1
M37120M6-102FP
CN14
IRIS OPEN
IRIS CLOSE
YH
IRIS Y
OBCP
C HD
C VD
NC
Y OH
V EDGE
BUSY
S CLOCK
S DATA 1
S DATA 2
V REC MODE
GND
From/To 1 5
AF,CN51
R7 2.2K
R6 0
R5 10
R4 10
R1 2.2K
R2 10K
R50 2.2K
C10
INDICATOR POSITION
1 8 DISPLAY
LONG(30MIN)
SW1
NORMAL(20MIN)
6V BATT
SW4
D/T SET(−)
SW3
D/T SET(+)
SW2
D/T SELECT
R2 1.8K
R1 1.5K
L BATT
CN1
TAPE SEL
BATTERY(+)
NC
BATTERY(−)
GND
To 0 1
VTR,CN1
KEY 4
L BATT
GND
IC3
S-8054HN-CB
5V DOWN DET
R18 22K
R17 470
Q1
DTC124EU
D5
RD7.5M(B2)
C7 0.1
R32 2.2K
R33 2.2K
L3 39
C10 20P
D7
D8
C6 0.1
R65 10K
D7,D8
RD7.5M(B2)
R66 10K
1 7 JUNCTION
CN3
CN2
NEAR
FAR
AF GND
CPU GND
KEY 1
KEY 2
KEY 3
From OPERATION <CAMERA>
To 1 5
AF,CN59
KEY 3
KEY 2
KEY 1
TALLY
REG 5V
GND
CN16
R8 10K
R9 10K
R10 10K
R11 10K
R13 2.2K
R14 2.2K
R15 2.2K
R16 2.2K
1 6 TALLY
D1
CN1
TALLY
REG 5V
CN11
UNREG 6V
A FAD
REG 5V
REEL CNT
S DATA 1
C HD
S CLK
C VD
S RDY
DECK HD
S DATA 2
DECK VD
JIG ENA
CAM P CTL
CAM JIG CTL
CHARACTER
From/To 0 1
VTR,CN14
R19 2.2K
R20 2.2K
R67 10K
R72 10K
R21 2.2K
R22 2.2K
R23 470
R24 470
R25 470
R26 470
R27 2.2K
R28 2.2K
R29 2.2K
R30 1K
IC6
TC7S04F
L1 22
C2 0.1
C1 22/6.3
C18 0.1
C17 22/6.3
IC7
S-81250HG-RD
5V REG
D1
RB451F
C3 22/6.3
C4 0.1
C5 1
R31 100K
IC4
S-8052ANB-NE
RESET
D2
D3
R77 1K
R12 2.2K
D4
D2-D4
MA704
C16 22/6.3
R36 1.2M
R37 1.2M
R39 1.5M
R38 100K
R62 22K
IC5
AN1393S
IC1
A FADE
V FADE
Vref
GND
5V
HD
VD
GND
Vcc
NC
G
B
NC
R
B
FL
Y GAIN
AN 2
AN 1
AN 0
INT 3
FLICKER IN
P SW
5V DOWN
S RDY
S CLK
S OUT
S IN
AF
S RDY
S CLK
S OUT
S IN
DECK
CAMERA CONTROL CPU
OUT 2
C POW ON
OSD MODE SW
FADER CTL SW
FLICKER IN
CINEMA MODE
RDB
SYNC
JIG ENA
L BATT ALM
LLL
SHT 1
SHT 2
SHT 3
FADE MODE 1
FADE MODE 2
SRAM CTL
T READY
T DATA
T CLOCK
CS
SK
DO
DI
NC
OUT
GND
NC
NC
OUT
GND
IRIS CLOSE
JIG CTL
TALLY
REEL CNT PLS
V REC MODE
R34 4.7M
R75 0
X1
C11 15P
C12 12P
R35 1M
R76 0
X2
DO
GND

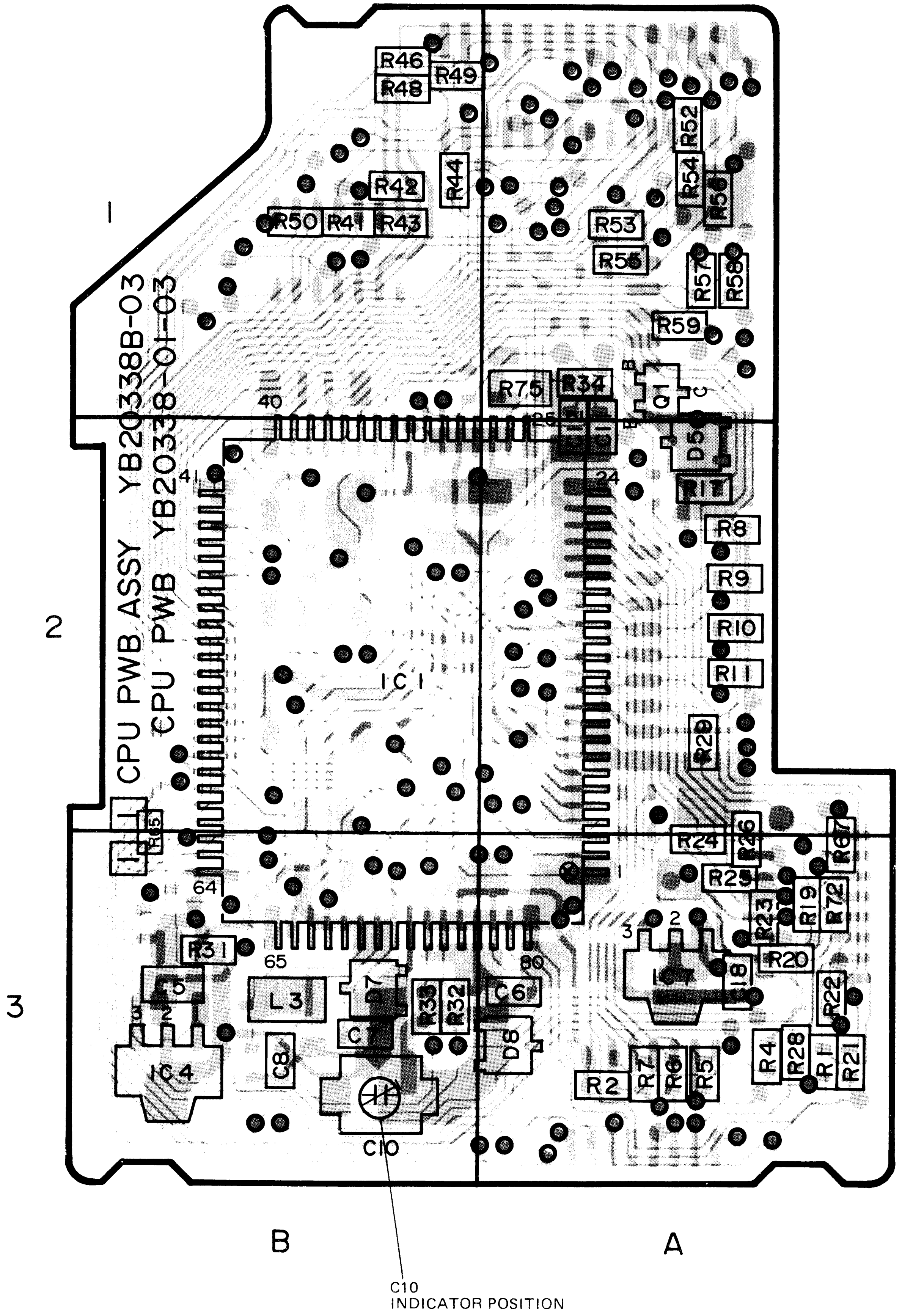
- **Shaded (▨) parts are critical for safety.**
  Replace only with specified part numbers.
- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.
- Address of chip parts
  A-1D
  Address
  A : Discrete parts side
  B : Chip parts side



1 1 CPU
IC1 M37120M6-102FP
CN13
IRIS OPEN
YH
IRIS Y
OB CP
C HD
C VD
FRAME PLS
SHUTTER 1
SHUTTER 2
SHUTTER 3
CAM 15.5V
CAM -8V
CAM 9V
NC
From/To 1 3 SSG,CN31
R41 2.2K
R42 2.2K
R43 2.2K
R50 2.2K
C10 INDICATOR POSITION
R7 2.2K
R6 0
R5 10
R4 10
R1 2.2K
R2 10K
IC3 S-8054HN-CB
5V DOWN DET
R18 22K
R17 470
Q1
D5
Q1 DTC124EU
D5 RD7.5M(B2)
R8 10K
R9 10K
R10 10K
R11 10K
R13 2.2K
R14 2.2K
R15 2.2K
R16 2.2K
R19 2.2K
R20 2.2K
R67 10K
R72 10K
R21 2.2K
R22 2.2K
R23 470
R24 470
R25 470
R26 470
R27 2.2K
R28 2.2K
R29 2.2K
L1 22
C2 0.1
C1 22/6.3
R30 1K
IC6 TC7S04F
C18 0.1
C17 22/6.3
IC7 S-81250HG-RD
5V REG
D1 RB451F
R31 100K
C3 22/6.3
C4 0.1
IC4 S-8052ANB-NE
RESET
C5 1
D2
D3
D4
R77 1K
R12 2.2K
C16 22/6.3
D2-D4 MA704
R36 1.2M
R37 1.2M
R38 100K
R39 1.5M
R62 22K
IC5 AN1393S
C7 0.1
R32 2.2K
R33 2.2K
C10 20P
L3 39
D7
D8
C6 0.1
R65 10K
D7,D8 RD7.5M(B2)
R66 10K
IC1
CAMERA CONTROL CPU
A FADE
V FADE
Vref
GND
5V
FD
VD
GND
Vcc
NC
G
B
NC
R
B
FL
Y GAIN
AN 2
AN 1
AN 0
INT 3
FLICKER IN
P SW
5V DOWN
S RDY
S CLK
S OUT
S IN
AF
S RDY
S CLK
S OUT
S IN
DECK
IN
OUT
GND
NC
IN
OUT
GND
IRIS CLOSE
JIG CTL
TALLY
REEL CNT PLS
V REC MODE
OUT 2
C POW ON
OSD MODE SW
FADER CTL SW
FLICKER IN
CINEMA MODE
RDB
SYNC
JIG ENA
L BATT ALM
LLL
SHT 1
SHT 2
SHT 3
FADE MODE 1
FADE MODE 2
SRAM CTL
T READY
T DATA
T CLOCK
CS
SK
DO
DI
R34 4.7M
R75 0
X1
C11 15P
C12 12P
R35 1M
R76 0
X2
R74 2.2K
IC2 CAT93C46K-XE
ROM
DO
DI
SK
CS
GND
ORG
NC
Vcc
C15 0.1
IC8 TC4S584F
C19 0.01
CN12
CINEMA
FRAME PLS
LITHIUM
GND
GND
CAM 9V
CAM -8V
CAM 15.5V
CAM 5V
NC
YOH
V EDGE
FL CTL
AW CTL(B)
AW CTL(R)
FADE CTL
DECK HD
DECK VD
CHARACTER
FRINGE
CAM POWER CTL
Y GAIN
FADE MODE 2
FADE MODE 1
S RAM CTL
T READY
T DATA
T CLOCK
NC
GND
From/To 1 2 VIDEO,CN22
R73 10
R44 10
R45 10
R46 2.2K
R47 100
R48 100
R49 2.2K
R51 2.2K
R52 2.2K
R53 2.2K
R54 2.2K
R55 2.2K
R56 2.2K
CN15
CAM 5V
AW SENS R
AW SENS G
AW SENS B
FLICKER
AW IN
GND
From/To AUTO WHITE SENSOR
R57 2.2K
R58 2.2K
R59 2.2K
R60 22K
R61 2.2K
D
E
F
G
I
J
K
L

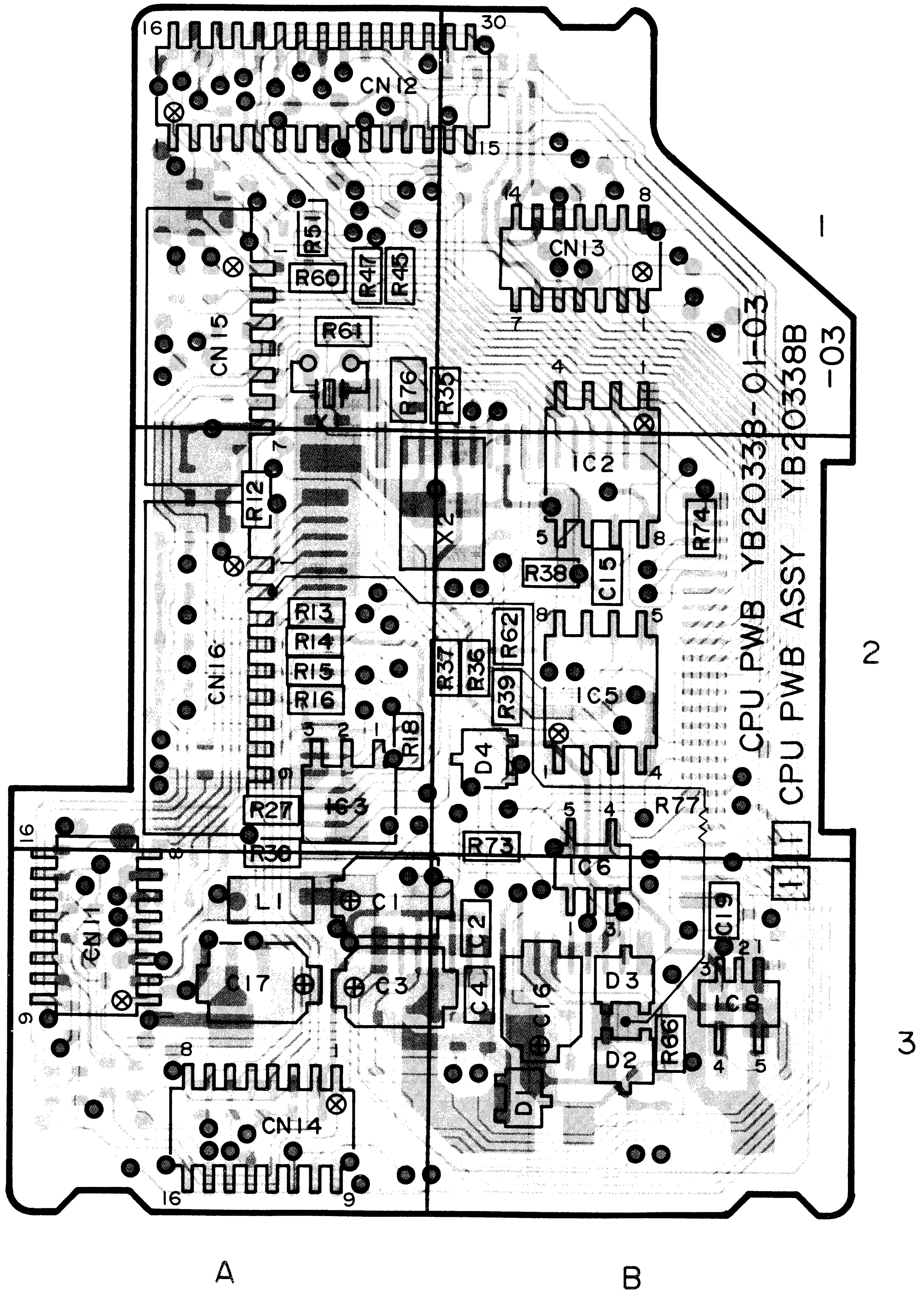
5.23 CPU, DISPLAY, JUNCTION & TALLY CIRCUIT BOARD

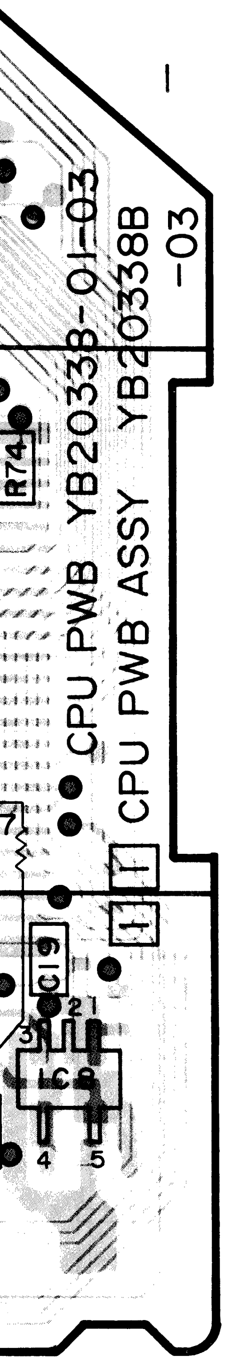
– Rear –
(B)


R46
R48
R49
R42
R44
R50
R41
R43
R52
R54
R56
R53
R55
R57
R58
R59
R75
R34
Q1
D5
R17
R8
R9
R10
R11
R26
R24
R25
R67
R23
R19
R72
R20
R22
R4
R28
R1
R21
R2
R7
R6
R5
IC1
IC7
IC4
IC5
L3
C8
C7
C10
C6
D7
D8
R31
R33
R32
R65
1
2
3
40
41
64
65
80
24
25
YB20338B-03
CPU PWB ASSY
CPU PWB YB20338-01-03
B
A

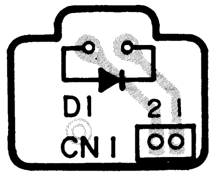
C10
INDICATOR POSITION

– Front –
(A)


CN12
16
30
15
CN13
CN15
CN16
CN11
CN14
R51
R60
R47
R45
R61
R76
R35
R12
X2
IC2
R74
R38
C15
R13
R14
R15
R16
R18
R37
R36
R62
R39
IC5
D4
R27
IC3
R30
R73
R77
IC6
L1
C1
C2
C17
C3
C4
C16
D3
D2
D1
R66
IC8
C19
1
2
3
CPU PWB YB20338-01-03
CPU PWB ASSY YB20338B-03
A
B

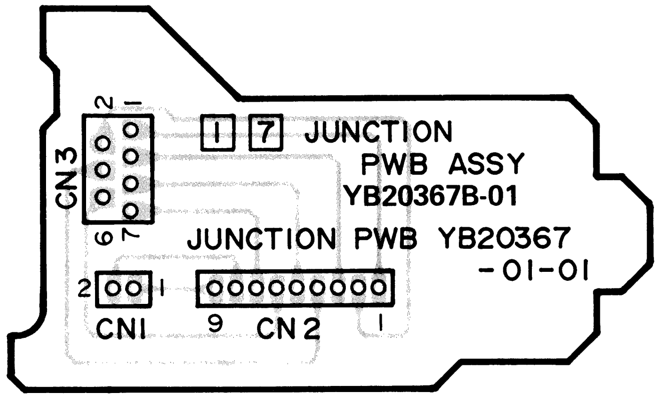

1 1 CPU PWB ASSY YB20338B
-03
CPU PWB YB20338-01-03
R74
C19
IC8
3 2 1
4 5

– TALLY –



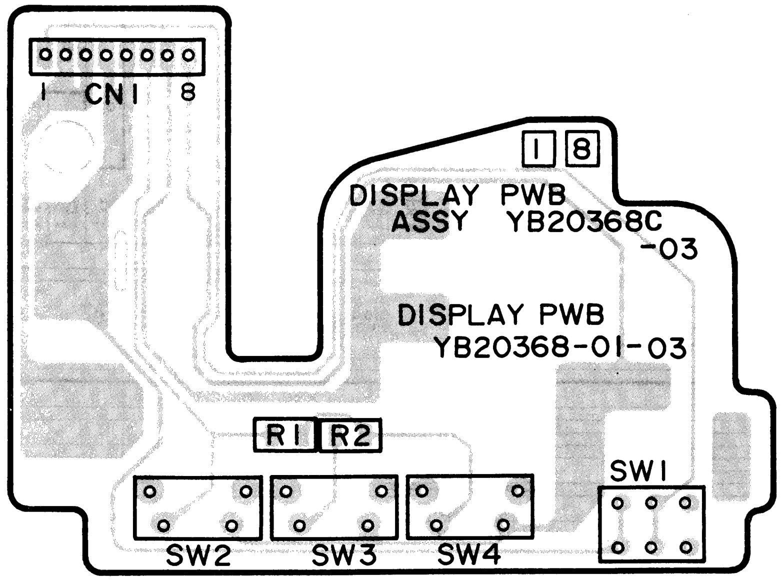
1 6 TALLY PWB ASSY
YB20366B
TALLY PWB
YB20366

– JUNCTION –


CN3
2 1
6 7
2 1
CN1
9 CN2 1

1 7 JUNCTION
PWB ASSY
YB20367B-01
JUNCTION PWB YB20367
-01-01

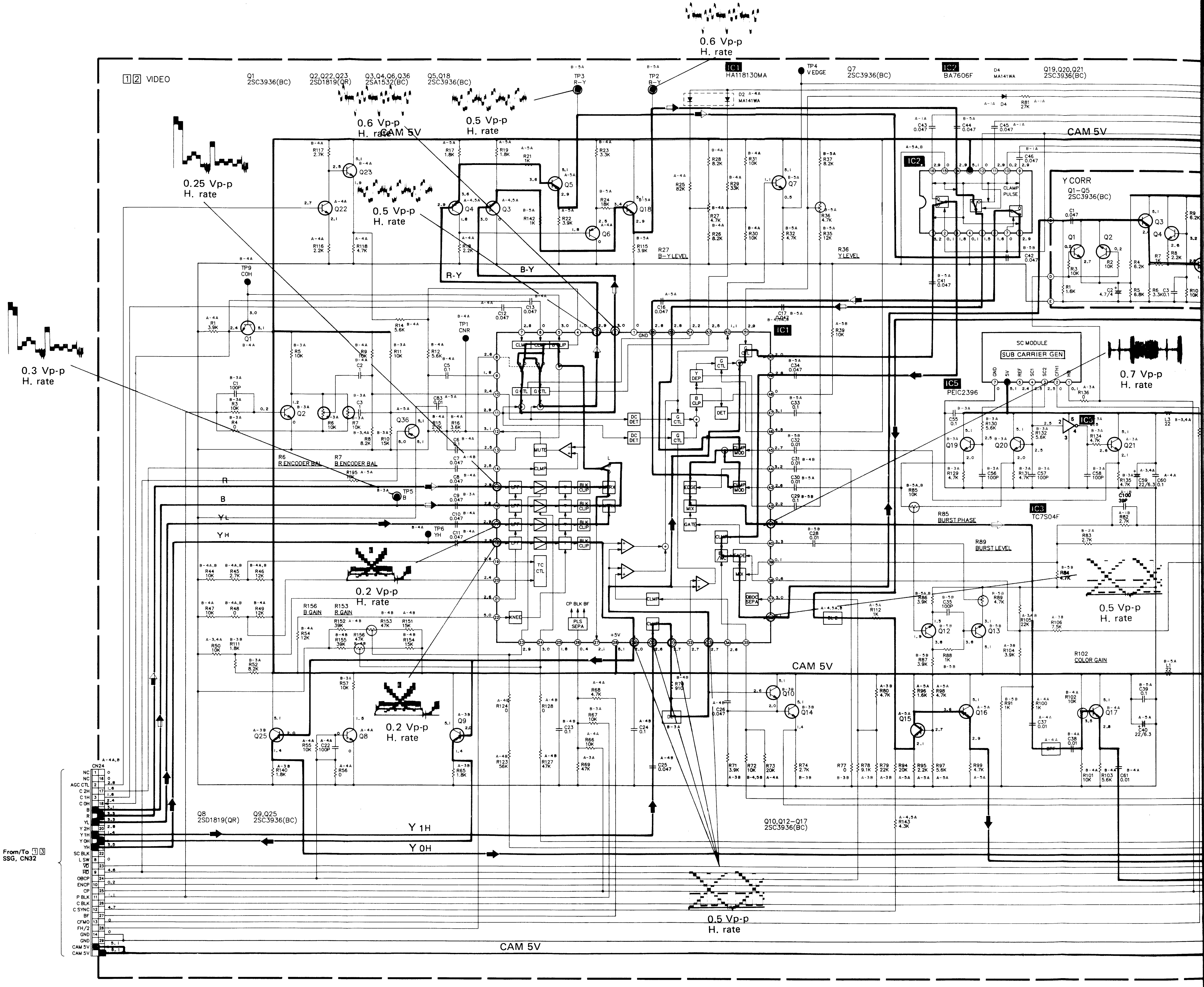
– DISPLAY –


1 CN1 8
R1
R2
SW1
SW2
SW3
SW4

1 8
DISPLAY PWB
ASSY YB20368C
-03

DISPLAY PWB
YB20368-01-03

5.24 VIDEO SCHEMATIC DIAGRAM



1 2 VIDEO
Q1 2SC3936(BC)
Q2,Q22,Q23 2SD1819(QR)
Q3,Q4,Q6,Q36 2SA1532(BC)
Q5,Q18 2SC3936(BC)
TP3 R-Y
TP2 B-Y
IC1 HA118130MA
TP4 VEDGE
Q7 2SC3936(BC)
IC2 BA7606F
D4 MA141WA
Q19,Q20,Q21 2SC3936(BC)
0.6 Vp-p H. rate
0.5 Vp-p H. rate
0.25 Vp-p H. rate
0.3 Vp-p H. rate
0.7 Vp-p H. rate
0.2 Vp-p H. rate
CAM 5V
Y CORR
Q1-Q5 2SC3936(BC)
R-Y
B-Y
R27 B-Y LEVEL
R36 Y LEVEL
TP9 COH
TP1 CNR
TP5 B
TP6 YH
R6 R ENCODER BAL
R7 B ENCODER BAL
R156 B GAIN
R153 R GAIN
SC MODULE
SUB CARRIER GEN
IC5 PEIC2396
IC3 TC7S04F
R85 BURST PHASE
R89 BURST LEVEL
R102 COLOR GAIN
R
B
YL
YH
Y 1H
Y 0H
Q8 2SD1819(QR)
Q9,Q25 2SC3936(BC)
Q10,Q12-Q17 2SC3936(BC)
CN24
From/To 1 3 SSG, CN32
NC
NC
AGC CTL
C 2H
C 1H
C 0H
B
R
YL
Y 2H
Y 1H
Y 0H
YH
SC BLK
L SW
VD
HD
OBCP
ENCP
CP
P BLK
C BLK
C SYNC
BF
CFMO
FH/2
GND
GND
CAM 5V
CAM 5V
1
2
3
4
5
6
A
B
C
E
F
G
H

- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.

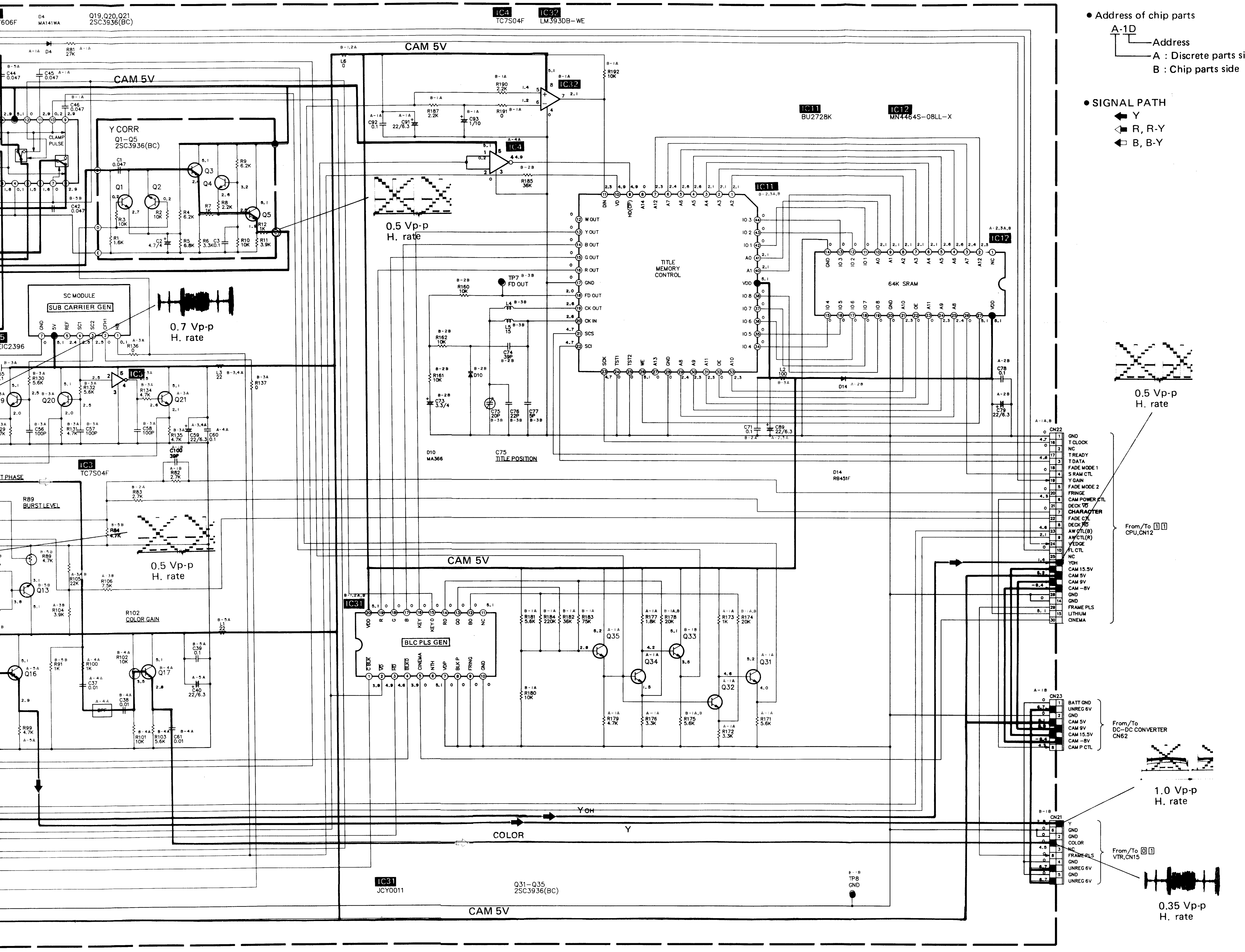
- Waveform : Measured as the grey scale pattern and color bar pattern which lighted up brightly is shot in the Rehersal mode.

- Address of chip parts

A-1D
Address
A : Discrete parts side
B : Chip parts side

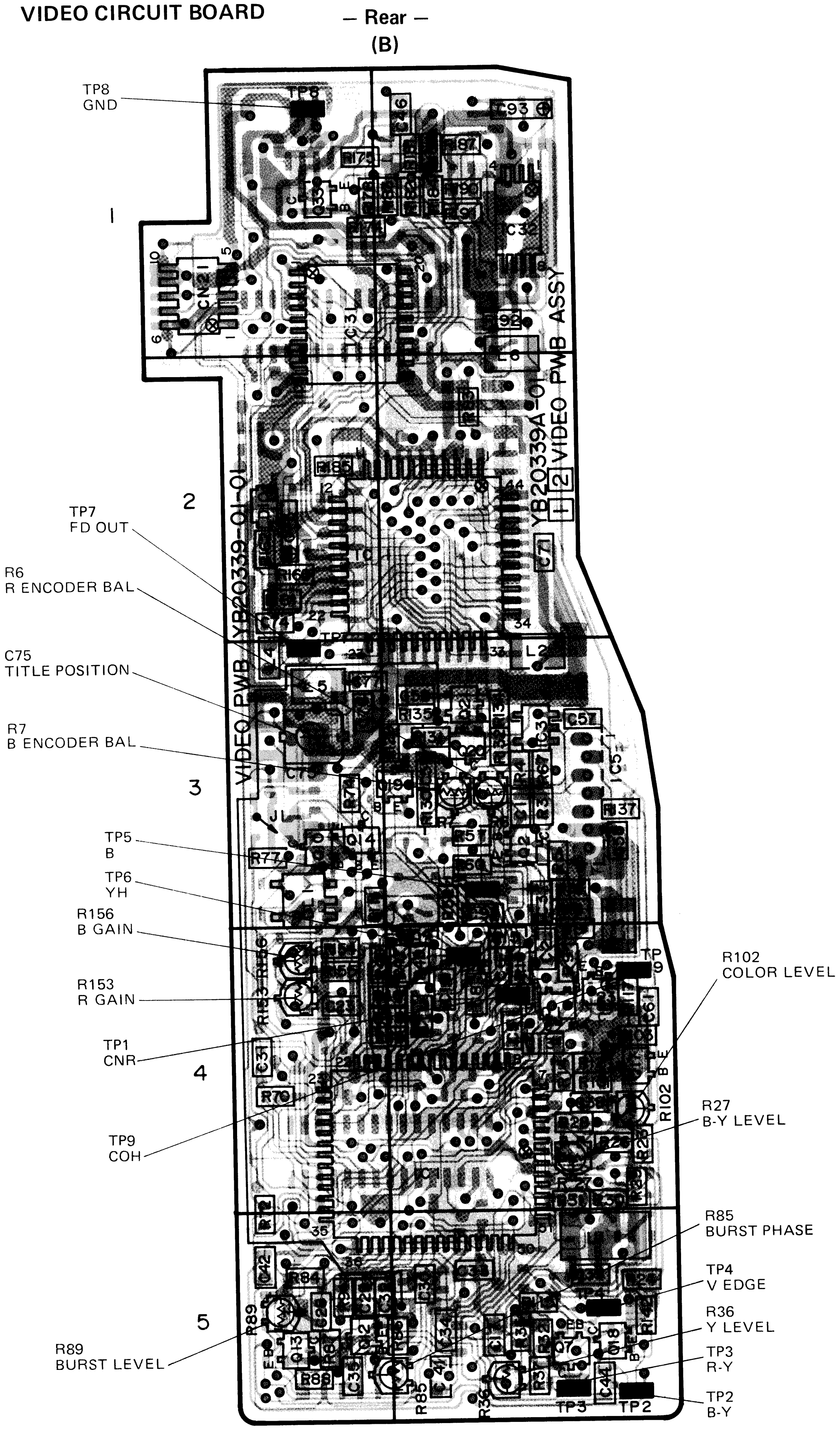
- SIGNAL PATH

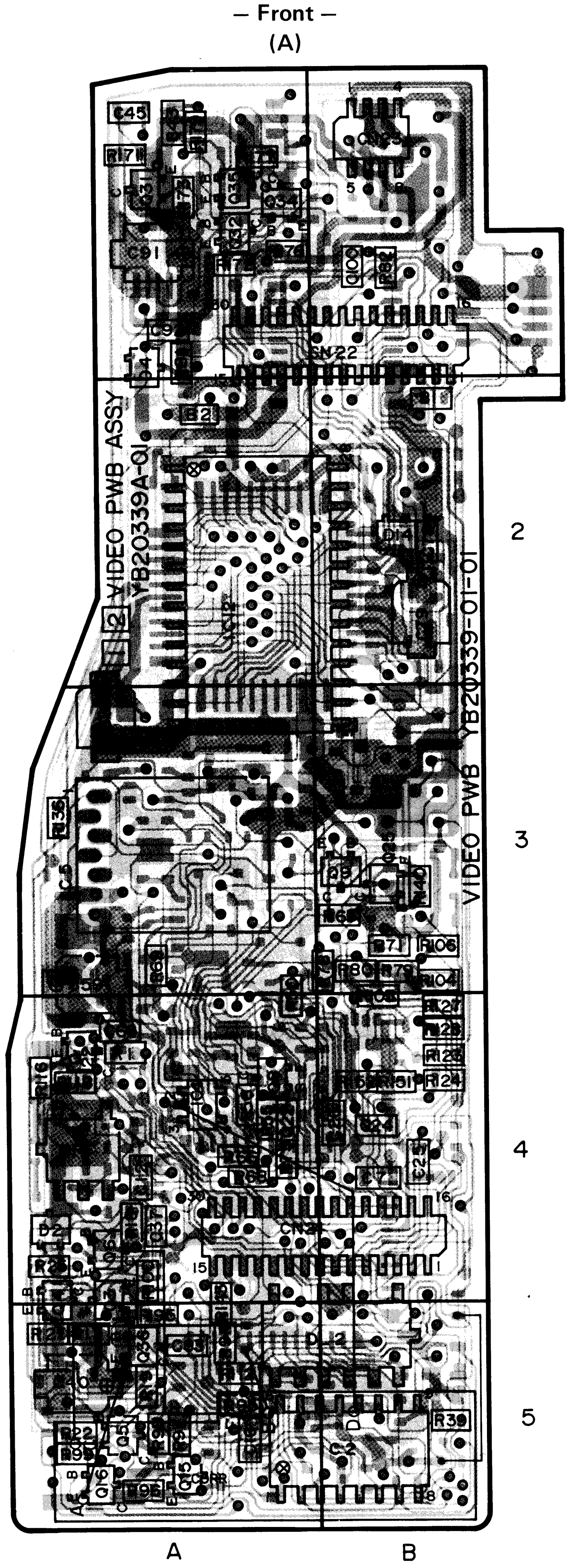
← Y
⇦ R, R-Y
⇦ B, B-Y

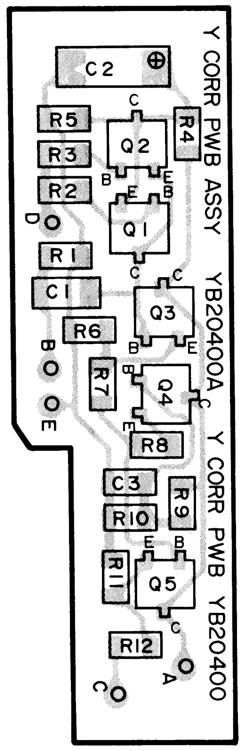


IC4 TC7S04F
IC32 LM393DB-WE
Q19,Q20,Q21 2SC3936(BC)
D4 MA141WA
CAM 5V
Y CORR
Q1–Q5 2SC3936(BC)
CLAMP PULSE
0.5 Vp-p H. rate
SC MODULE
SUB CARRIER GEN
0.7 Vp-p H. rate
IC11 BU2728K
IC12 MN4464S-08LL-X
TITLE MEMORY CONTROL
64K SRAM
TP7 FD OUT
D10 MA366
C75 TITLE POSITION
D14 RB451F
IC3 TC7S04F
R89 BURST LEVEL
R102 COLOR GAIN
IC31 JCY0011
BLC PLS GEN
Q31–Q35 2SC3936(BC)
TP8 GND
CN22
GND
T CLOCK
NC
T READY
T DATA
FADE MODE 1
S RAM CTL
Y GAIN
FADE MODE 2
FRINGE
CAM POWER CTL
DECK VD
CHARACTER
FADE CTL
DECK HD
AW CTL(B)
AW CTL(R)
Y EDGE
FL CTL
NC
YOH
CAM 15.5V
CAM 5V
CAM 9V
CAM −8V
GND
GND
FRAME PLS
LITHIUM
CINEMA
From/To 11 CPU,CN12
CN23
BATT GND
UNREG 6V
GND
CAM 5V
CAM 9V
CAM 15.5V
CAM −8V
CAM P CTL
From/To DC-DC CONVERTER CN62
1.0 Vp-p H. rate
CN21
Y
GND
GND
COLOR
NC
FRAME PLS
GND
UNREG 6V
GND
UNREG 6V
From/To 01 VTR,CN15
0.35 Vp-p H. rate
YOH
Y
COLOR

5.25 VIDEO CIRCUIT BOARD


— Rear —
(B)
TP8 GND
TP7 FD OUT
R6 R ENCODER BAL
C75 TITLE POSITION
R7 B ENCODER BAL
TP5 B
TP6 YH
R156 B GAIN
R153 R GAIN
TP1 CNR
TP9 COH
R89 BURST LEVEL
R102 COLOR LEVEL
R27 B-Y LEVEL
R85 BURST PHASE
TP4 V EDGE
R36 Y LEVEL
TP3 R-Y
TP2 B-Y
VIDEO PWB YB20339-01-01
YB20339A-01 VIDEO PWB ASSY
1
2
3
4
5
B
A

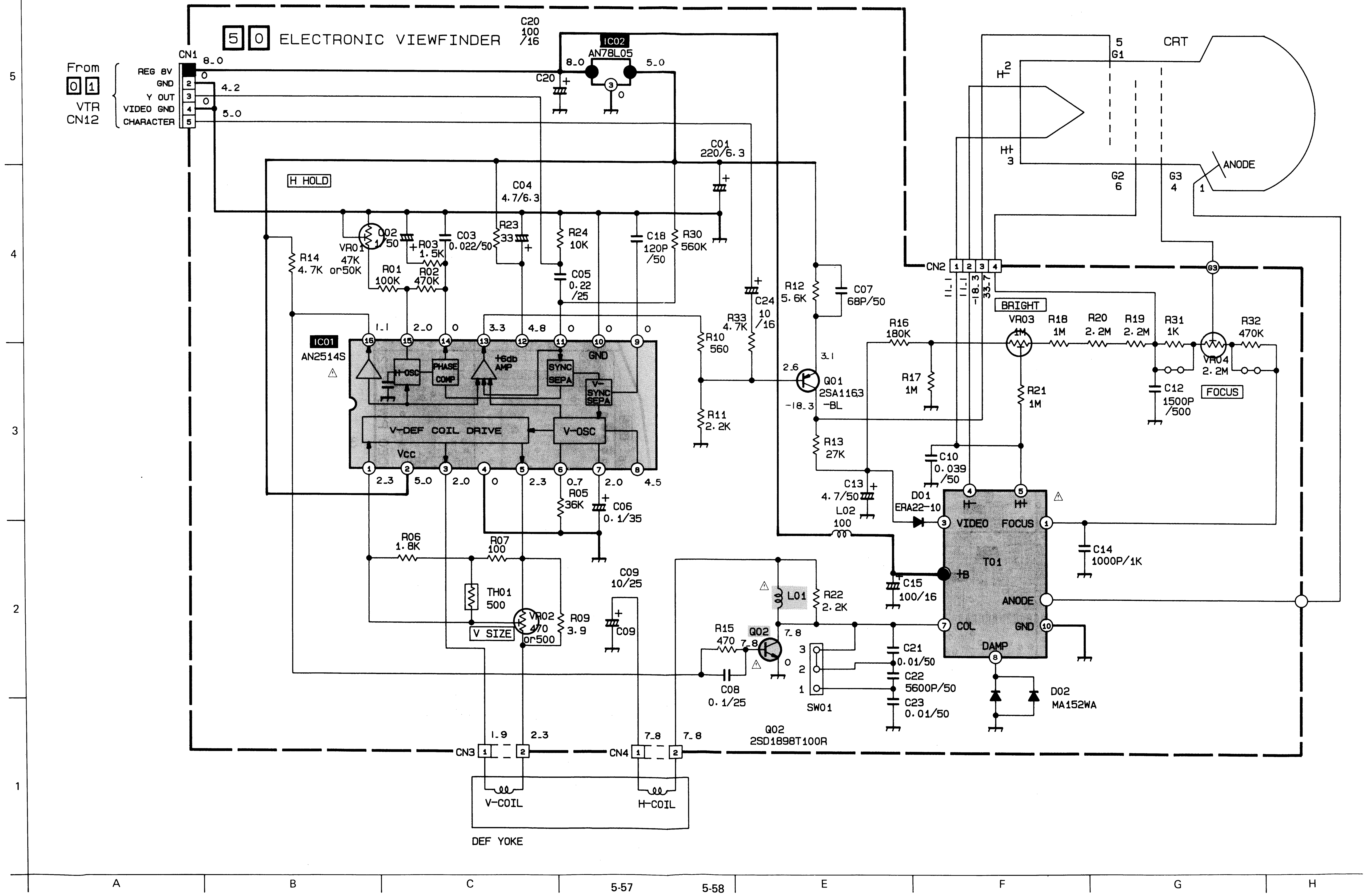

— Front —
(A)
VIDEO PWB ASSY YB20339A-01
VIDEO PWB YB20339-01-01
1
2
3
4
5
A
B


Y CORR PWB ASSY YB20400A
Y CORR PWB YB20400
C2
R5
R4
R3
Q2
R2
Q1
R1
C1
Q3
R6
R7
Q4
R8
C3
R9
R10
R11
Q5
R12

6
5
4
3
2
1
A
B
C
E
F
G
H

5.26 ELECTRONIC VIEW FINDER SCHEMATIC DIAGRAM

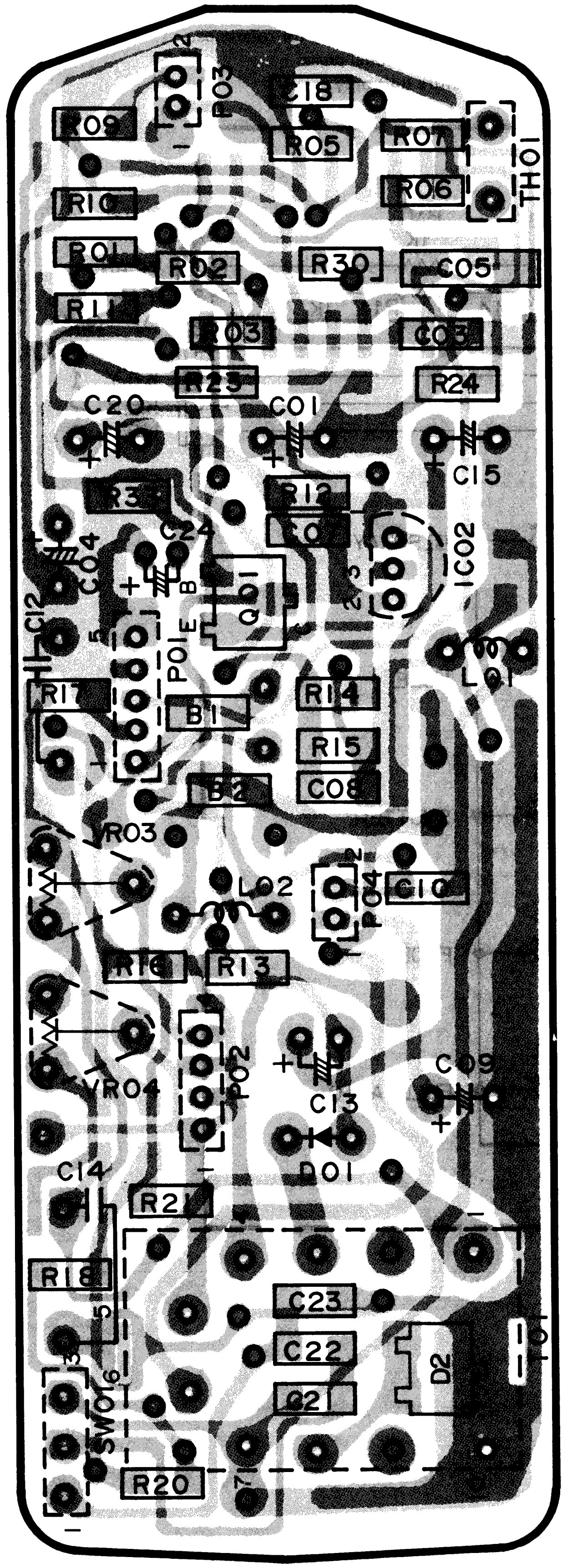
- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.
- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.



6
5
4
3
2
1
A
B
C
D
E
F
G
H
50 ELECTRONIC VIEWFINDER
From 01 VTR CN12
CN1
REG 8V
GND
Y OUT
VIDEO GND
CHARACTER
8.0
4.2
5.0
C20 100/16
IC02 AN78L05
8.0
5.0
C01 220/6.3
H HOLD
C04 4.7/6.3
Q02
VR01 47K or50K
C03 0.022/50
R03 1.5K
R01 100K
R02 470K
R23 33
R24 10K
C05 0.22/25
C18 120P/50
R30 560K
R14 4.7K
IC01 AN2514S
H-OSC
PHASE COMP
+6db AMP
SYNC SEPA
V-SYNC SEPA
GND
V-DEF COIL DRIVE
V-OSC
Vcc
1.1
2.0
3.3
4.8
2.3
5.0
2.0
0.7
4.5
R05 36K
C06 0.1/35
R06 1.8K
R07 100
TH01 500
VR02 470 or500
V SIZE
R09 3.9
C09 10/25
R33 4.7K
C24 10/16
R10 560
R11 2.2K
R12 5.6K
C07 68P/50
Q01 2SA1163-BL
3.1
2.6
-18.3
R13 27K
C13 4.7/50
L02 100
D01 ERA22-10
C10 0.039/50
R16 180K
R17 1M
BRIGHT
VR03 1M
R18 1M
R20 2.2M
R19 2.2M
R31 1K
R32 470K
VR04 2.2M
FOCUS
C12 1500P/500
R21 1M
CN2
11.1
11.1
-18.3
33.7
CRT
G1
G2
G3
H
ANODE
T01
VIDEO
FOCUS
+B
ANODE
COL
GND
DAMP
C14 1000P/1K
C15 100/16
L01
R22 2.2K
R15 470
Q02 2SD1898T100R
7.8
C08 0.1/25
SW01
C21 0.01/50
C22 5600P/50
C23 0.01/50
D02 MA152WA
CN3
1.9
2.3
CN4
7.8
7.8
V-COIL
H-COIL
DEF YOKE

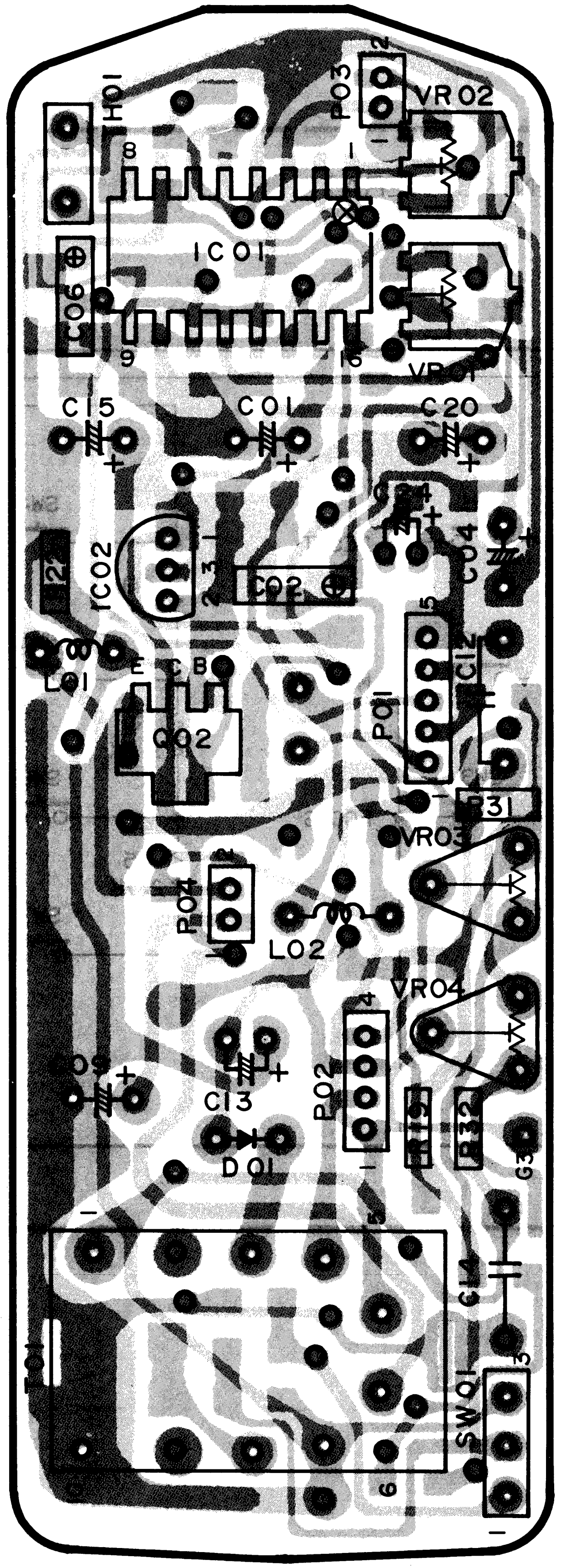
5.27 ELECTRONIC VIEW FINDER CIRCUIT BOARD

– Rear –
(B)


P03
C18
R09
R05
R07
R06
TH01
R10
R01
R02
R30
C05
R11
R03
C03
R25
R24
C20
C01
C15
R33
R12
C24
C02
C04
IC02
Q01
C12
P01
L01
R17
B1
R14
R15
B2
C08
VR03
L02
P04
C10
R16
R13
VR04
P02
C13
C09
D01
C14
R21
R18
C23
C22
D2
C21
T01
SW01
R20

5 0 E.VF PWB ASSY YU30407-101

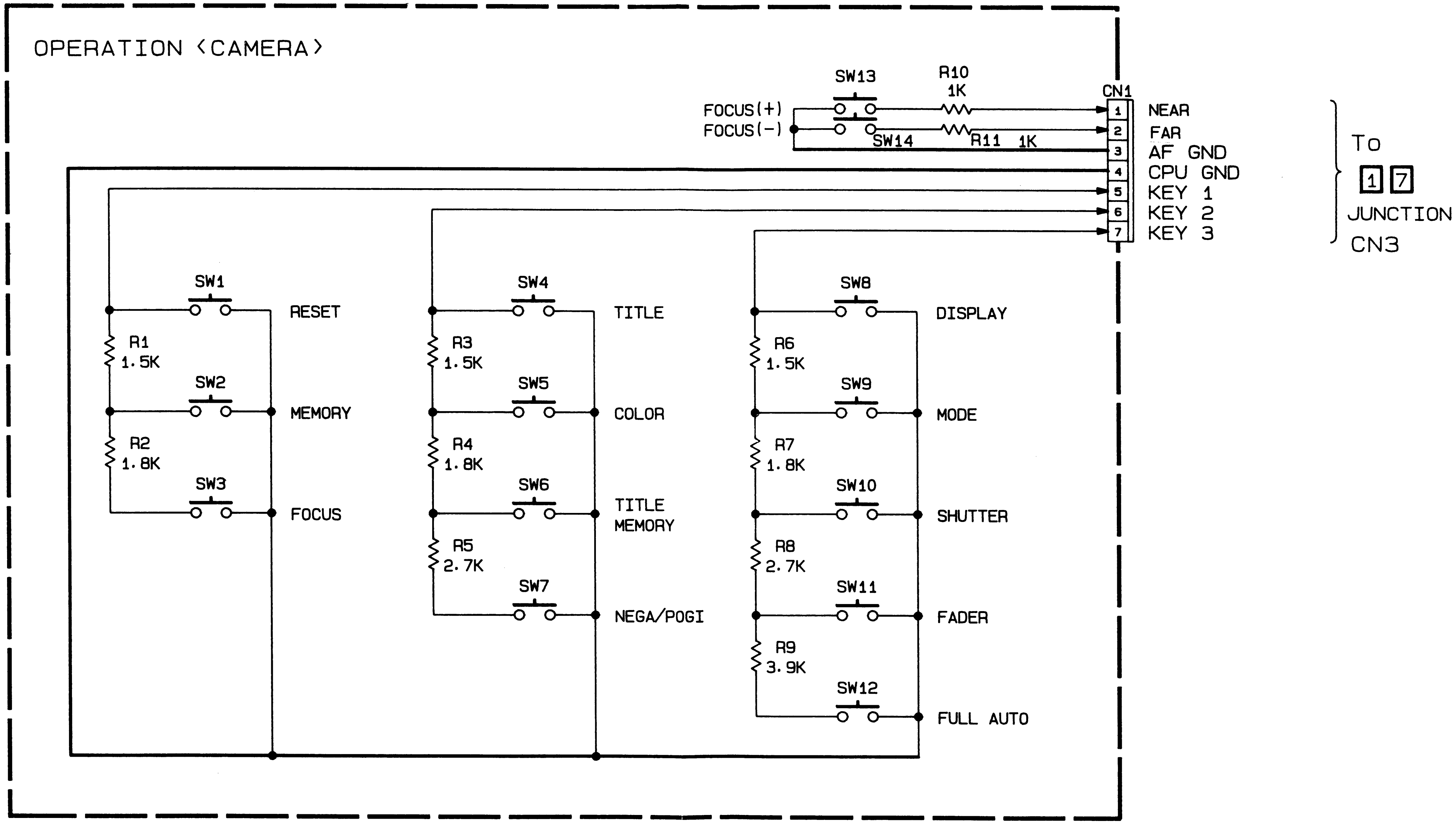
– Front –
(B)


TH01
P03
VR02
IC01
C06
VR01
C15
C01
C20
C24
IC02
C04
C02
L01
Q02
P01
C12
R31
VR03
P04
L02
VR04
C09
C13
P02
R19
R32
D01
G3
C14
T01
SW01

5 0 E.VF PWB ASSY YU30407-101

5.28 OPERATION (CAMERA) SCHEMATIC DIAGRAM

NOTE: This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.



OPERATION <CAMERA>
SW13
R10
1K
FOCUS(+)
FOCUS(-)
SW14
R11 1K
CN1
1 NEAR
2 FAR
3 AF GND
4 CPU GND
5 KEY 1
6 KEY 2
7 KEY 3
To
1 7
JUNCTION
CN3
SW1
RESET
R1
1.5K
SW2
MEMORY
R2
1.8K
SW3
FOCUS
SW4
TITLE
R3
1.5K
SW5
COLOR
R4
1.8K
SW6
TITLE
MEMORY
R5
2.7K
SW7
NEGA/POGI
SW8
DISPLAY
R6
1.5K
SW9
MODE
R7
1.8K
SW10
SHUTTER
R8
2.7K
SW11
FADER
R9
3.9K
SW12
FULL AUTO

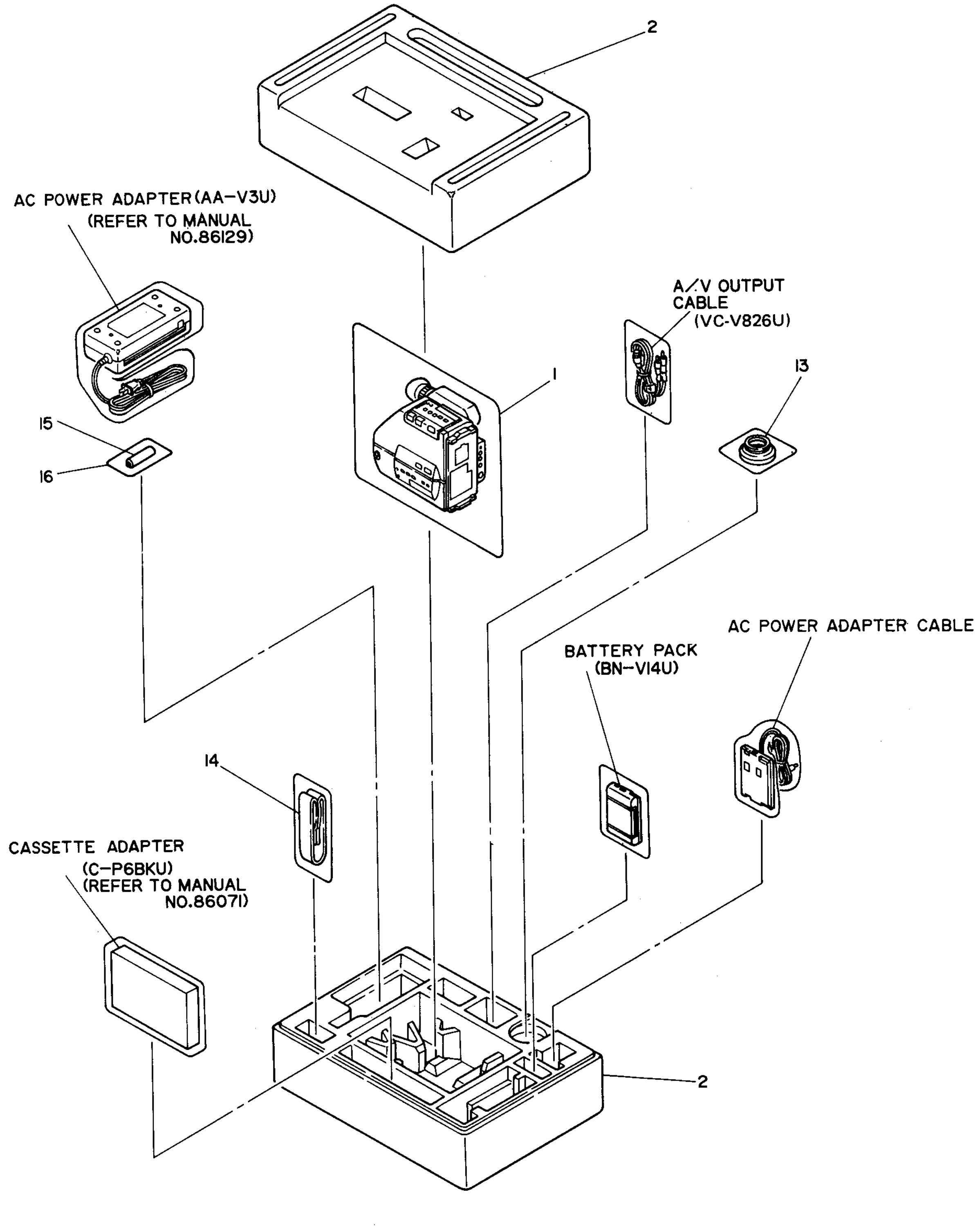
SECTION 6
MECHANICAL PARTS AND EXPLODED VIEWS

SAFETY PRECAUTION

Parts identified by the △ symbol are critical for safety. Replace only with specified part numbers.

NOTE: [M] indicates mechanical symbol number.

6.1 PACKING ASSEMBLY <M1>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AC POWER ADAPTER(AA-V3U)
(REFER TO MANUAL NO.86129)
A/V OUTPUT CABLE (VC-V826U)
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BATTERY PACK (BN-V14U)
AC POWER ADAPTER CABLE
CASSETTE ADAPTER (C-P6BKU)
(REFER TO MANUAL NO.86071)
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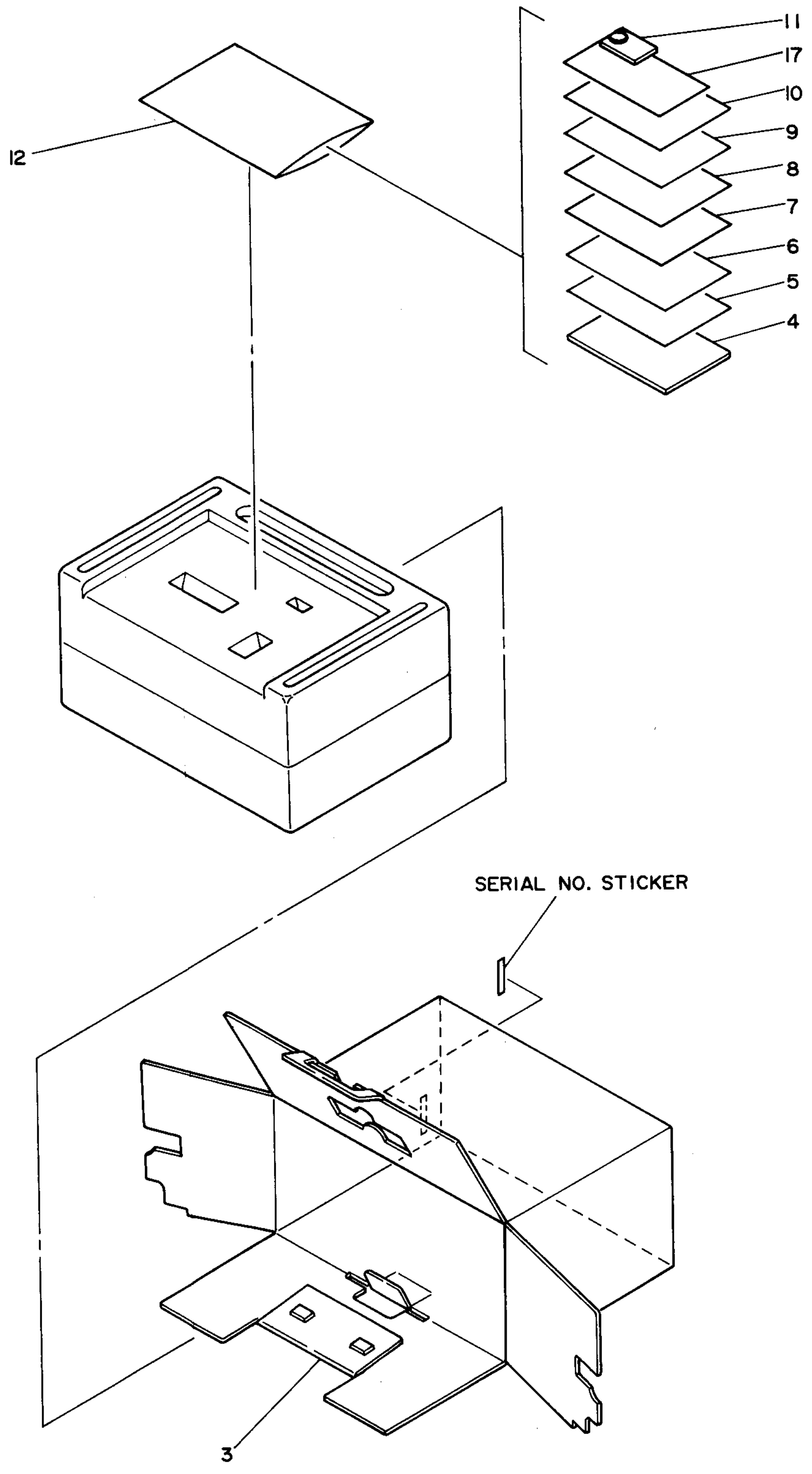
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SERIAL NO. STICKER
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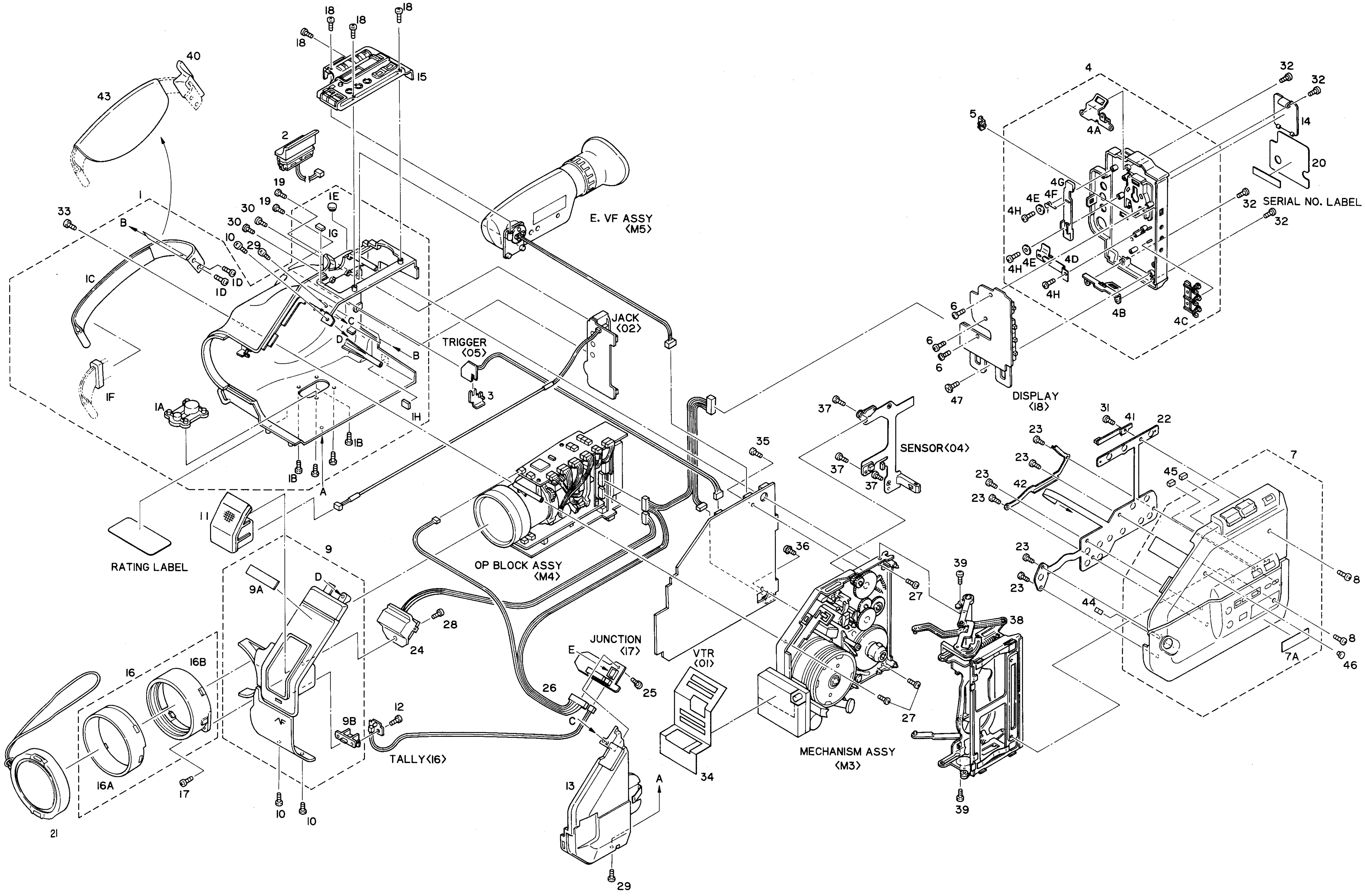
PACKING ASSEMBLY <M1>

#△ REF No.	PART No.	PART NAME, DESCRIPTION
1	YQM30021-19	POLY BAG
2	YQ30880A	CUSHION ASSY
3	YQ30878-2	PACKING CASE,FOR U.S.A,GY
3	YQ30878	PACKING CASE,FOR U.S.A,BK
3	YQ30878-3	PACKING CASE,FOR CANADA
△ 4	YU30052-141	INSTRUCTIONS,FOR U.S.A
△ 4	YU30052-142	INSTRUCTIONS,FOR CANADA
△ 5	PU33941-3-3	SAFETY CAUTION
6	YU40406-28	MARKET SHEET,FOR U.S.A
7	BT-20046E	TOLL FREE CARD,FOR U.S.A
8	YU41302	CATALOGU(ACC),FOR U.S.A
9	TCN-3409	TAPE CATALOG
10	BT-20071A	INSTRUCTION GUIDE,FOR CANADA
△ 11	YU40547	BATTERY
12	QPGA025-03505	POLY BAG
13	YQ41881-1-3	SET UP RING
14	YQ10188A-1	SHOULDER STRAP ASSY
15	UM-3DJ	BATTERY
16	QPGA005-01005	POLY BAG
17	BT-20025K	WARRANTY CARD,FOR CANADA
17	BT-20062B	WARRANTY CARD,FOR U.S.A

6.2 FINAL ASSEMBLY <M2>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A
E. VF ASSY
〈M5〉
JACK
〈02〉
TRIGGER
〈05〉
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RATING LABEL
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9A
D
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16B
16A
21
17
9B
10
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12
TALLY〈16〉
OP BLOCK ASSY
〈M4〉
26
JUNCTION
〈17〉
E
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C
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VTR
〈01〉
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MECHANISM ASSY
〈M3〉
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37
SENSOR〈04〉
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SERIAL NO. LABEL
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DISPLAY
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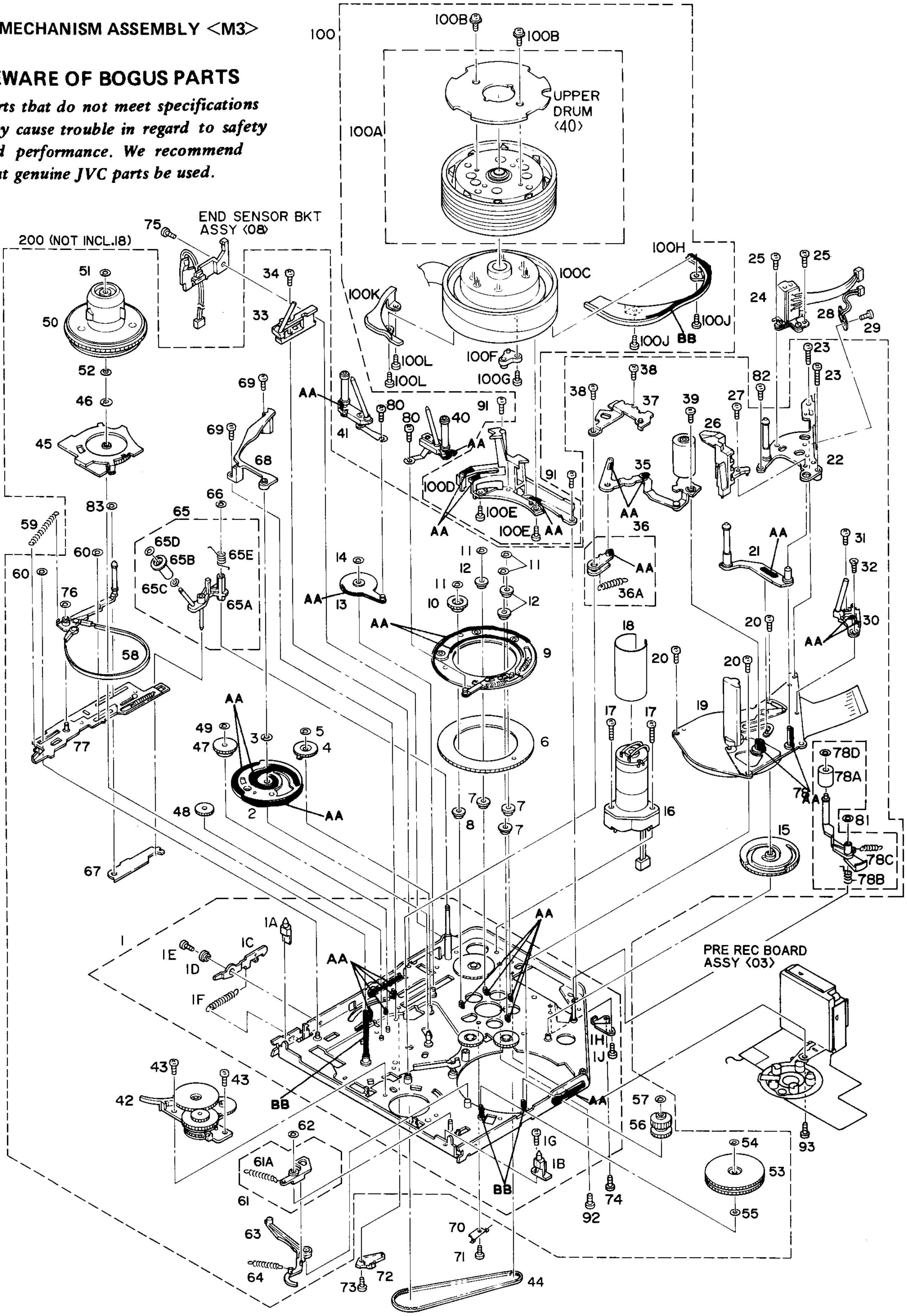
FINAL ASSEMBLY <M2>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
⚠	1	YQ10230E-8	LOWER CASE ASSY,GY
⚠	1	YQ10230D-8	LOWER CASE ASSY,BK
	1A	YQ30756-1-4	BASE,BK
	1A	YQ30756-2-4	BASE,GY
	1B	YQM30052-2	SCREW,X4
	1C	YQ30847-1-1	GRIP BELT,BK
	1C	YQ30847-2-1	GRIP BELT,GY
	1D	YQM30032-42	SCREW,X2
	1E	YQ41874-1-2	STOPPER
	1F	YQ42087	RING
	1G	YQM30029-58	SPACER
	1H	YQM30029-55	SPACER
	2	YQ20363-3-3	ZOOM SWITCH
	3	YQ41864	PWB HOLDER
⚠	4	YQ20338B-4	REAR COVER ASSY
	4A	YQ41875-1-2	HOOK(1)
	4B	YQ42046-1-2	HOOK(2)
	4C	YQ30766	BUTTON(DATE)
	4D	YQ30767A-1	LOCK LEVER ASSY
	4E	YU41718	WASHER,X2
	4F	YQ41879	TORTION SPRING
	4G	YQ41878-1-2	KNOB(LOCK)
	4H	YQM30032-40	SPECIAL SCREW,X3
	5	YQ41877	KNOB(TIME)
	6	SPSF2005Z	SCREW,X3
⚠	7	YQ10231D-5	CASSETTE COVER ASSY,BK
⚠	7	YQ10231E-5	CASSETTE COVER ASSY,GY
	7A	YQ30867-2	LABEL
	8	YQM30032-3-2	SPECIAL SCREW,X2
⚠	9	YQ10240B-3	FRONT PANEL ASSY,GY
⚠	9	YQ10240A-3	FRONT PANEL ASSY,BK
	9A	YQ30872	PLATE
	9B	YQ41880	INDICATOR
	10	YQM30052-2	SCREW,X3
	11	YQ20433	MICROPHONE
	12	SPSF2005Z	SCREW
⚠	13	YQ30771A-5	UPPER COVER ASSY,BK
⚠	13	YQ30771B-5	UPPER COVER ASSY,GY
⚠	14	YQ30772	CLOCK BATTERY COVER
	15	YQ10216-4-9	OPERATION UNIT,BK
	15	YQ10216-5-9	OPERATION UNIT,GY
	16	YQ30777A-2	HOOD ASSY
	16A	YQ30773	HOOD
	16B	YQ30764-1-3	RING
	17	YQM30052-3	SCREW
	18	YQM30052-1	SCREW,X4
	19	YQM30052-2	SCREW,X2
⚠	20	YU30409-2-1	BATTERY BASE SHEET
	21	YQ41899A-1	HOOD CAP ASSY
	22	YQ30751-1-2	OPERATION PWB
	23	YQM30032-40	SPECIAL SCREW,X6
	24	YQ30733-1-2	WHITE BALANCE SENSOR ASSY
	25	YQM30032-40	SPECIAL SCREW
	26	ML-Y00559A	CPU PWB WIRE
	27	SPSF2005Z	SCREW,X3
	28	YQM30052-3	SCREW
	29	YQM30052-2	SCREW,X2
	30	YQM30052-3	SCREW,X2
	31	YQM30032-2-2	SPECIAL SCREW
	32	YQM30052-3	SCREW,X4
	33	YQM30052-2	SCREW
	34	YQ30859	SHEET
	35	SPSH1725M	SCREW
	36	YQ40691	SPECIAL SCREW
	37	SPSH1725M	SCREW,X3
	38	YQ30616A-19	HOUSING ASSY
	39	SPSH1725M	SCREW,X2
	40	YQ30778-1-2	FINGER REST,BK
	40	YQ30778-2-2	FINGER REST,GY
	41	YQ42016	OPERATION HOLDER
	42	YQ30822	PWB HOLDER
	43	YQ30848-3	GRIP PAD,BK
	43	YQ30848-4	GRIP PAD,GY
	44	YQM30029-52	SPACER
	45	YQM30029-56	SPACER,X2
	46	YQ40703	CAP,BK
	46	YQ40703-7	CAP,GY
	47	YQM30032-2-2	SPECIAL SCREW

6.3 MECHANISM ASSEMBLY <M3>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.



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UPPER DRUM <40>
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END SENSOR BKT ASSY <08>
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PRE REC BOARD ASSY <03>
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Category	Part number	MARK
Grease	KANTO-G-31KAV	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

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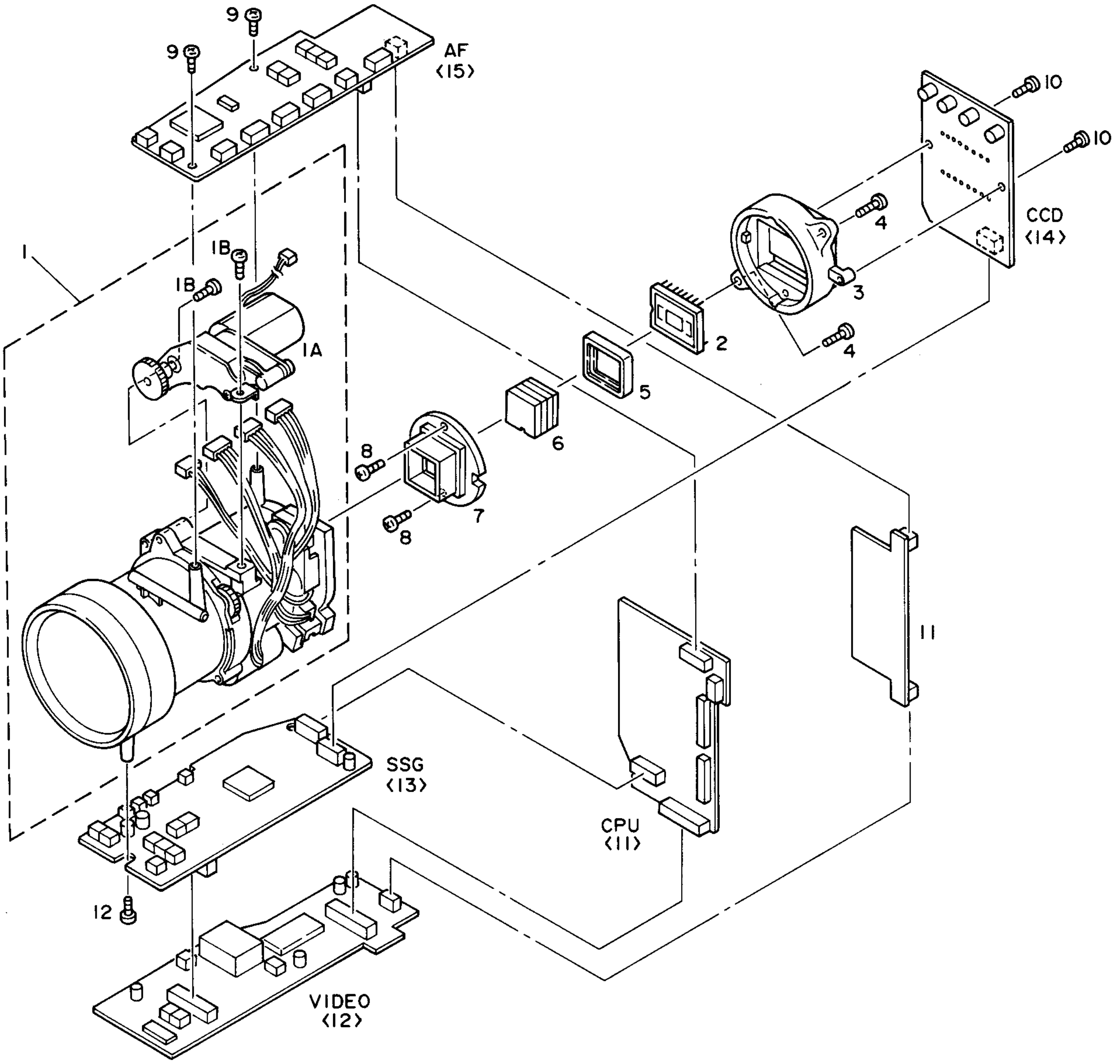
MECHANISM ASSEMBLY <M3>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
1	YQ10172B-22	MAIN DECK ASSY
1A	YQ41500-1-1	GUIDE PIN(S)
1B	YQ41501-1-3	GUIDE PIN(T)
1C	YQ41621-1-2	CANCEL PLATE
1D	YQ41622-1-1	COLLAR
1E	SPSH1725M	SCREW
1F	YQM30001-49-12	TENSION SPRING
1G	SPSH1725M	SCREW
1H	YQ41867	SUPPORT PLATE
1J	SPSH1720M	SCREW
2	YQ20294-1-3	CONTROL CAM GEAR
3	PQM30017-25	SLIT WASHER
4	YQ41796	LOADING GEAR 2
5	PQM30017-27	SLIT WASHER
	or YQM30017-1	SLIT WASHER
6	YQ41503-1-2	DRIVE GEAR
7	YQ41901-1-1	LOADING GUIDE,X3
8	YQ41902-1-1	LOADING GUIDE 2
9	YQ41506B	LOADING RING ASSY
10	YQ41903	SUPPLY MIDDLE GEAR
11	PQM30017-27	SLIT WASHER,X4
12	YQ41904	L.WASHER,X3
13	YQ41511B	SUPPLY LOADING GEAR ASSY
14	PQM30017-27	SLIT WASHER
15	YQ30640	MIDDLE POLE CAM GEAR
⚠ 16	YU41403T-1	LOADING MOTOR ASSY
17	SPSH1710M	SCREW,X2
18	YQ41920	SHIELD COVER
⚠ 19	YU41404V-4	CAPSTAN MOTOR ASSY
20	SPSH1725M	SCREW,X3
21	YQ41517A-5	MIDDLE POLE ARM ASSY
22	YQ41996A-1	SUB DECK ASSY
23	SPSH1760M	SCREW,X2
24	YQ41871A-3	A/C HEAD FINAL ASSY
25	YQ40904A-1	ALOCK SCREW,X2
26	YQ30642-1-7	CASSETTE BLOCK
27	SPSH1735M	SCREW
28	YU41682	DEW SENSOR
29	SPSH1720M	SCREW
30	YQ41997A	MIDDLE POLE CACHER ASSY
31	SPSH1720M	SCREW
32	SSSH1730M	SCREW
33	YQ41535A	SUPPLY SLANT POLE ASSY
34	SPSH1735M	SCREW
35	YQ30606B	PINCH ROLLER ARM ASSY
36	YQ41544B	SPRING PLATE ASSY
36A	YQ42022	TENSION SPRING
37	YQ41552A-4	GUIDE PLATE ASSY
38	SPSH1425M	SCREW,X2
39	YQM30032-21	SPECIAL SCREW
40	YU41444-1-3	TAKE UP POLE BASE ASSY
41	YU41445-2-2	SUPPLY POLE BASE ASSY
42	YU41406-1-2	CENTER GEAR ASSY
43	SPSH1725M	SCREW,X2
44	YQ41558	TIMING BELT
45	YU41407	CAM SW ASSY
46	PQM30017-22	SLIT WASHER
47	YQ41559	ENCODER GEAR(1)
48	YQ41560	ENCODER GEAR(2)
49	PQM30017-27	SLIT WASHER
50	YU41408-1-2	SUPPLY REEL DISK ASSY
51	PQM30017-27	SLIT WASHER
52	Q03093-835	WASHER
53	YU41459-1-2	TAKE UP CLUTCH ASSY
54	PQM30017-27	SLIT WASHER
55	Q03093-835	WASHER
56	YQ41562	TAKE UP GEAR
57	PQM30017-27	SLIT WASHER
58	YQ41563B-4	TENSION ARM ASSY
59	YQ41963	TENSION SPRING
60	PQM30017-27	SLIT WASHER,X2
61	YQ41628A	SEARCH BRAKE SUB ASSY
61A	YQ41551-2	TENSION SPRING
62	PQM30017-27	SLIT WASHER
63	YQ41756-1-4	BRAKE DRIVE LEVER
64	YQ41625	TENSION SPRING
65	YQ41585A-5	IMPEDANCE ROLLER ARM ASSY
65A	YQ41586A-1	IMPEDANCE ROLLER ARM SUB ASSY
65B	YQ41588A-3	IMPEDANCE ROLLER ASSY
65C	Q03093-835	WASHER
65D	PQM30017-27	SLIT WASHER
65E	YQ41664	TORSION SPRING
66	PQM30017-27	SLIT WASHER
67	YQ41591	CANCEL LEVER
68	YDM2046-2-5	SUPPLY GUIDE RAIL
69	SPSH1735M	SCREW,X2
70	YU41447-1-2	BRUSH
71	SPSH1735M	SCREW
72	YQ30615-1-2	LED GUIDE
73	SPSH1720M	SCREW
74	SPSK1420M	SCREW
75	SPSH1735M	SCREW
76	PQM30017-27	SLIT WASHER
77	YQ41577A-7	SLIDE PLATE ASSY
78	YQ41988A-3	HEAD CLEANER ASSY
78A	YQ41990	CLEANER
78B	YQ42047-1-1	SPRING
78C	YQ41994-1-1	TENSION SPRING
78D	PQM30017-27	SLIT WASHER
80	YQ42009	SPECIAL SCREW,X2
81	PQM30017-27	SLIT WASHER
82	SPSH1735M	SCREW
83	PQM30017-27	SLIT WASHER
91	SPSK1735M	SCREW,X2
92	SPSH1725M	SCREW
93	SPSK1720M	MINI SCREW
100	YDV2028A	DRUM FINAL ASSY
100A	YDM2047A	UPPER DRUM ASSY

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	100B	YDM4031	SCREW,X2
	100C	YDM2049A	LOWER DRUM MOTOR ASSY
	100D	YDM2044-1-7	UV BASE
	100E	SPSK1730M	SCREW,X2
	100F	YDM4073	DRUM SPACER
	100G	SPSK1730M	SCREW
	100H	YDM2045-1-4	TAKE UP GUIDE RAIL
	100J	SPSH1725M	SCREW,X2
	100K	YDM2046-1-5	SUPPLY GUIDE RAIL
	100L	SPSH1725M	SCREW,X2
	200	YMA0001A	MECHANISM ASSY(B)

6.4 OPTICAL BLOCK ASSEMBLY <M4>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#⚠ REF No.	PART No.	PART NAME, DESCRIPTION

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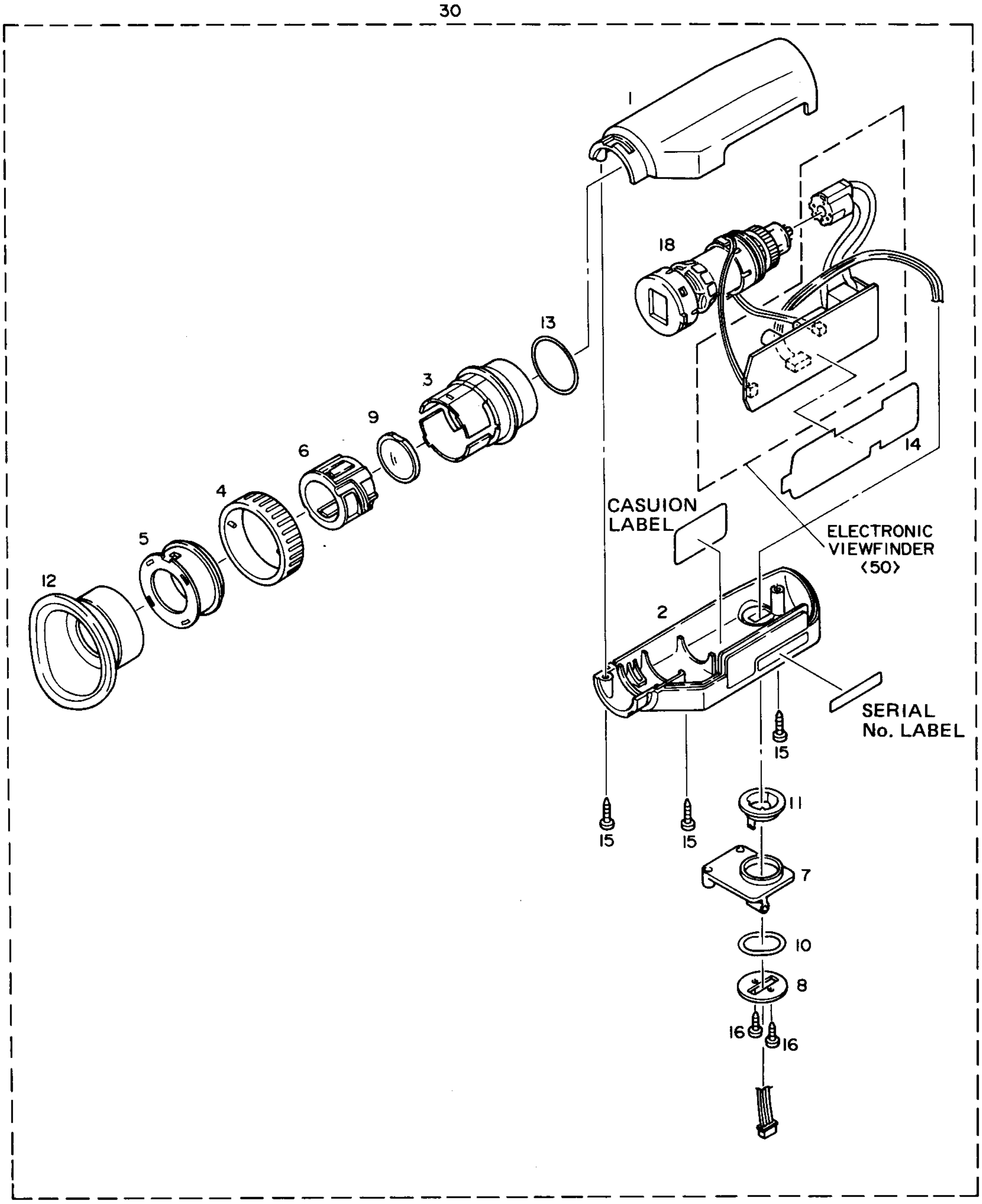
OPTICAL BLOCK ASSEMBLY <M4>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
⚠ 1	YU30398	OPTICAL BLOCK ASSY
1A	YU30398-001	ZOOM MOTOR ASSY
1B	YU30398-002	SCREW,X2
⚠ 2	MN3715FE	IC(CCD)
3	YQ30744-1-3	IMAGER HOLDER
4	DPSP2009Z	SCREW,X2
5	YQ41838	SPACER RUBBER
6	YU41741	OPTICAL LPF
7	YQ30745-1-2	OPTICAL LPF HOLDER
8	SPSK2004F	MINI SCREW,X2
9	SPSN2005Z	SCREW,X2
10	SPSP2004Z	SCREW,X2
11	YU41714	DC-DC CONVERTER
12	SPSN2005Z	SCREW

6.5 ELECTRICAL VIEWFINDER ASSEMLY <M5>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ELECTRONIC VIEWFINDER <50>
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ELECTRICAL VIEWFINDER ASSEMBLY <M5>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
1	YU30407-001	TOP CASE,BK
1	YU30407-006	TOP CASE,GY
2	YU30407-002	BOTTOM CASE,BK
2	YU30407-007	BOTTOM CASE,GY
3	YU30407-003	LENS HOLDER,BK
3	YU30407-008	LENS HOLDER,GY
4	YU30407-004	RING,BK
4	YU30407-009	RING,GY
5	YU30407-011	EYE CAP RECEIVER
6	YU30407-012	LENS CASE
7	YU30407-013	CAMERA PLATE
8	YU30407-014	WASHER
9	YU30407-015	LENS
10	YU30407-016	SPRING
11	YU30407-017	CAP
12	YU30407-018	EYE CAP
13	YU30407-019	O RING
14	YU30407-020	SHIELD
15	YU30407-021	SCREW,X3
16	YU30407-022	SCREW,X2
18	YU30407-024	CRT ASSY
⚠ 30	YU30407D-2	EVF ASSY,GY
⚠ 30	YU30407C-2	EVF ASSY,BK

SECTION 7
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

NOTES:

- [M] indicates mechanical symbol number.
- [2 digits] indicates circuit board symbol number.
- "X " indicates quantity per set.

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VTR BOARD ASSEMBLY <01>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	YB10067A-06	VTR BOARD ASSY
IC31	BA7757BK	IC
IC32	LM324DB	IC
IC101	JCY0001A2	IC
	or JCY0001A1	IC
IC102	JCY0002A1	IC
IC104	M56780VP	IC
IC105	BA7043FS	IC
IC251	VC5035	IC
IC252	LB1851M	IC
IC301	JCY0012	IC
	or M37414E5-164FP	IC
IC302	M54543AFP	IC
IC303	BU4584BF	IC
IC304	S-87050CF	IC
	or S-87050AF-S	IC
IC305	LM358DB	IC
IC401	BA7046F	IC
IC402	BU4053BF	IC
	or UPD4053BG	IC
IC403	TC4S69F	IC
IC501	HA118149MA	IC
IC502	TL8808F	IC
IC503	TC4S81F	IC
IC504	MM1031XM	IC
Q1	DTC144EE	TRANSISTOR
Q16	2SA1577(QR)	TRANSISTOR
Q17	2SC4617(RS)	TRANSISTOR
Q18	2SC4617(RS)	TRANSISTOR
Q19	2SC4617(RS)	TRANSISTOR
Q20	DTA124EE	TRANSISTOR
Q21	DTC144EE	TRANSISTOR
Q31	DTC144EE	TRANSISTOR
Q34	2SA1577(QR)	TRANSISTOR
Q35	DTC144EE	TRANSISTOR
Q36	2SA1577(QR)	TRANSISTOR
Q37	DTC144EE	TRANSISTOR
Q38	2SC4617(RS)	TRANSISTOR
Q39	DTC144EE	TRANSISTOR
Q40	DTC144EE	TRANSISTOR
Q41	DTA124EE	TRANSISTOR
Q42	UMW1	TRANSISTOR
Q101	DTC144EE	TRANSISTOR
	or UN9213	TRANSISTOR
Q102	DTC114EE	TRANSISTOR
	or UN9214	TRANSISTOR
Q103	DTC144EE	TRANSISTOR
	or UN9213	TRANSISTOR
Q104	UMZ1	TRANSISTOR
	or XP4601	TRANSISTOR
Q106	UMZ1	TRANSISTOR
	or XP4601	TRANSISTOR
Q110	2SA1774(RS)	TRANSISTOR
Q111	2SC4617(RS)	TRANSISTOR
	or 2SD2216(RS)	TRANSISTOR
Q112	DTA144EE	TRANSISTOR
	or UN9113	TRANSISTOR
Q113	DTA144EE	TRANSISTOR
	or UN9113	TRANSISTOR
Q114	2SC4617(RS)	TRANSISTOR
	or 2SD2216(RS)	TRANSISTOR
Q116	2SC4617(RS)	TRANSISTOR
Q117	DTC144EE	TRANSISTOR
	or UN9213	TRANSISTOR
Q120	DTA144EE	TRANSISTOR
	or UN9113	TRANSISTOR
Q121	2SA1577(PQR)	TRANSISTOR
Q122	DTC144EE	TRANSISTOR
	or UN9213	TRANSISTOR
Q123	UMG2	TRANSISTOR
Q124	UMG2	TRANSISTOR
Q301	DTA114EE	TRANSISTOR
Q302	2SA1774(QRS)	TRANSISTOR
Q303	2SA1774(QRS)	TRANSISTOR
Q304	2SC4617(QRS)	TRANSISTOR
Q305	DTC114EE	TRANSISTOR
Q306	DTC114EE	TRANSISTOR
Q401	2SA1774(QRS)	TRANSISTOR
Q501	2SA1577(QR)	TRANSISTOR
Q502	2SA1577(QR)	TRANSISTOR

#△ REF No.	PART No.	PART NAME, DESCRIPTION
Q503	2SA1577(QR)	TRANSISTOR
Q504	UN9213	TRANSISTOR
Q505	UN9213	TRANSISTOR
Q506	FMU1	TRANSISTOR
Q507	FMU1	TRANSISTOR
Q508	2SC4617(QRS)	TRANSISTOR
Q509	2SC4617(QRS)	TRANSISTOR
Q510	2SC4617(QRS)	TRANSISTOR
Q511	2SA1774(QRS)	TRANSISTOR
Q512	UN9213	TRANSISTOR
Q513	UN9213	TRANSISTOR
Q515	DTC144EE	TRANSISTOR
Q516	DTC144EE	TRANSISTOR
Q517	DTC144EE	TRANSISTOR
Q518	2SC4617(QRS)	TRANSISTOR
Q519	2SC4617(QRS)	TRANSISTOR
Q520	2SC4617(QRS)	TRANSISTOR
Q521	2SC4617(QRS)	TRANSISTOR
Q522	2SA1774(QRS)	TRANSISTOR
Q523	2SC4617(QRS)	TRANSISTOR
Q524	2SC4617(QRS)	TRANSISTOR
Q525	DTC144EE	TRANSISTOR
Q526	DTC144EE	TRANSISTOR
Q527	DTC144EE	TRANSISTOR
Q528	DTC144EE	TRANSISTOR
Q529	2SA1577(QR)	TRANSISTOR
Q530	2SA1774(QRS)	TRANSISTOR
Q531	DTC144EE	TRANSISTOR
Q532	2SC4617(QRS)	TRANSISTOR
Q534	2SC4617(R)	TRANSISTOR
Q535	UN9111	TRANSISTOR
Q536	UN9113	TRANSISTOR
Q537	DTC144EE	TRANSISTOR
Q538	DTC144EE	TRANSISTOR
Q539	DTC144EE	TRANSISTOR
Q540	2SC4617(QRS)	TRANSISTOR
D16	DAN222	DIODE
D102	RB451F	DIODE
D103	DAN222	DIODE
	or MA132WK	DIODE
D104	MA141WA	DIODE
D105	DAN222	DIODE
D251	DAN222	DIODE
	or MA132WK	DIODE
D252	DAN222	DIODE
	or MA132WK	DIODE
D301	DAN222	DIODE
D302	RB451F	DIODE
D303	DAN222	DIODE
D304	RD6.8M(B1)	ZENER DIODE
D305	RD6.8M(B1)	ZENER DIODE
D307	RD6.8M(B1)	ZENER DIODE

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
D501	MA132WK	DIODE	
D502	MA132WA	DIODE	
D503	MA132WK	DIODE	
D504	MA132WK	DIODE	
D505	MA132WK	DIODE	
D506	MA133	DIODE	
D507	MA133	DIODE	
D508	MA132WK	DIODE	
R3	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R5	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R16	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R17	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R18	NRSA63J-393N	RESISTOR	39KΩ,1/16W
R19	NRSA63J-393N	RESISTOR	39KΩ,1/16W
R20	NRSA63K-5R6N	RESISTOR	5.6Ω,1/16W
R21	NRSA63K-5R6N	RESISTOR	5.6Ω,1/16W
R22	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R23	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R35	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R37	NRSA63J-185N	RESISTOR	1.8MΩ,1/16W
R38	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R39	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R40	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R41	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R42	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R43	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R44	NRSA63J-221N	RESISTOR	220Ω,1/16W
R45	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R46	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R48	NRSA63J-121N	RESISTOR	120Ω,1/16W
R49	NRSA63J-100N	RESISTOR	10Ω,1/16W
R50	NRSA63J-470N	RESISTOR	47Ω,1/16W
R51	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R52	NRSA63J-121N	RESISTOR	120Ω,1/16W
R53	NRSA63J-124N	RESISTOR	120KΩ,1/16W
R54	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R55	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R56	NRSA63J-681N	RESISTOR	680Ω,1/16W
R57	NRSA63J-302N	RESISTOR	3KΩ,1/16W
R58	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R59	NRSA63J-133N	RESISTOR	13KΩ,1/16W
R60	NVP1201-103N	V RESISTOR,AUDIO PB LEVEL	10KΩ,1/2W
R61	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R64	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R65	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R69	NRSA63J-331N	RESISTOR	330Ω,1/16W
R70	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R71	NRVA63D-513N	RESISTOR	51KΩ,1/16W
R72	NRVA63D-513N	RESISTOR	51KΩ,1/16W
R73	NRVA63D-243N	RESISTOR	24KΩ,1/16W
R74	NRVA63D-104N	RESISTOR	100KΩ,1/16W
R75	NRVA63D-104N	RESISTOR	100KΩ,1/16W
R76	NRSA63J-331N	RESISTOR	330Ω,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R77	NRVA63D-513N	RESISTOR	51KΩ,1/16W
R78	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R82	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R83	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R84	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R85	NRSA63K-2R2N	RESISTOR	2.2Ω,1/16W
R86	NVP1201-473N	V RESISTOR,BIAS LEVEL	47KΩ,1/2W
R87	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R88	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R89	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R90	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R91	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R92	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R93	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R94	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R101	NRSA63J-561N	RESISTOR	560Ω,1/16W
R103	NVP1201-474N	V RESISTOR,PB SW POINT	470KΩ,1/2W
R104	QRSA08J-124Y	RESISTOR	120KΩ,1/10W
R107	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R108	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R112	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R114	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R115	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R116	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R117	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R120	NRVA62D-103N	RESISTOR	10KΩ,1/16W
R121	NRVA62D-123N	RESISTOR	12KΩ,1/16W
R122	NRVA62D-152N	RESISTOR	1.5KΩ,1/16W
R123	NRVA62D-223N	RESISTOR	22KΩ,1/16W
R124	QRSA08J-682	RESISTOR	6.8KΩ,1/10W
R125	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R126	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R127	NRSA63J-683N	RESISTOR	68KΩ,1/16W
R128	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R129	NRSA63J-334N	RESISTOR	330KΩ,1/16W
R130	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R131	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R132	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R133	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R135	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R136	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R137	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R138	NRSA63J-681N	RESISTOR	680Ω,1/16W
R139	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R140	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R141	NRSA63J-823N	RESISTOR	82KΩ,1/16W
R142	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R143	NRSA63J-334N	RESISTOR	330KΩ,1/16W
R144	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R145	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R146	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R147	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R148	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R149	NRSA63J-0R0A	RESISTOR	0Ω,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R151	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R152	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R153	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R154	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R155	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R156	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R162	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R163	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R164	NRSA63J-474N	RESISTOR	470KΩ,1/16W
R165	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R170	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R172	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R173	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R174	NRSA63J-274N	RESISTOR	270KΩ,1/16W
R175	NRSA63J-684N	RESISTOR	680KΩ,1/16W
R176	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R177	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R179	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R180	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R181	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R182	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R183	NRSA63J-331N	RESISTOR	330Ω,1/16W
R188	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R190	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R191	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R194	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R195	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R196	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R198	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R199	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R200	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R212	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R213	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R214	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R215	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R216	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R218	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R251	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R252	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R253	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R254	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R255	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R257	NRSA63J-121N	RESISTOR	120Ω,1/16W
R258	NRSA63J-393N	RESISTOR	39KΩ,1/16W
R261	NRSA63K-2R2N	RESISTOR	2.2Ω,1/16W
R262	NRSA63K-2R2N	RESISTOR	2.2Ω,1/16W
R263	NRSA63K-2R2N	RESISTOR	2.2Ω,1/16W
R264	YU41353-R68N	RESISTOR	
R266	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R267	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R276	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R277	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R278	NRSA63J-681N	RESISTOR	680Ω,1/16W
R279	NRSA63K-2R2N	RESISTOR	2.2Ω,1/16W
R280	NRSA63K-2R2N	RESISTOR	2.2Ω,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R281	NRSA63K-2R2N	RESISTOR	2.2Ω,1/16W
R282	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R283	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R284	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R285	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R301	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R302	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R303	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R304	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R305	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R306	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R307	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R309	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R310	NRSA63J-751N	RESISTOR	750Ω,1/16W
R311	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R312	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R313	NRSA63J-101N	RESISTOR	100Ω,1/16W
R314	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R315	NRVA62D-363N	RESISTOR	36KΩ,1/16W
R316	NRVA62D-303N	RESISTOR	30KΩ,1/16W
R317	NRVA62D-683N	RESISTOR	68KΩ,1/16W
R318	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R319	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R320	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R321	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R322	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R323	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R324	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R327	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R328	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R329	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R330	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R331	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R332	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R333	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R334	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R335	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R336	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R337	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R338	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R339	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R340	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R341	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R342	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R343	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R344	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R345	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R346	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R347	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R348	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R349	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R350	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R351	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R352	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R353	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R354	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R355	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R356	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R357	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R358	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R359	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R360	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R361	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R362	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R363	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R364	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R365	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R366	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R367	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R368	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R369	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R370	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R371	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R372	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R373	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R374	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R375	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R376	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R377	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R378	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R379	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R380	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R390	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R391	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R392	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R393	NRSA63J-124N	RESISTOR	120KΩ,1/16W
R401	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R402	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R403	NRSA63J-474N	RESISTOR	470KΩ,1/16W
R404	NVP1201-473N	V RESISTOR,FH	47KΩ,1/2W
R405	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R406	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R407	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R408	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R501	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R502	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R503	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R504	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R505	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R506	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R507	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R508	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R509	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R510	NRSA63J-391N	RESISTOR	390Ω,1/16W
R511	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R512	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R513	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R514	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R515	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R516	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R517	NRSA63J-221N	RESISTOR	220Ω,1/16W
R518	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R519	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R520	NRSA63J-471N	RESISTOR	470Ω,1/16W
R521	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R522	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R523	NRSA63J-331N	RESISTOR	330Ω,1/16W
R524	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R525	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R527	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R528	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R529	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R531	NRSA63J-681N	RESISTOR	680Ω,1/16W
R532	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R533	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R534	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R535	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R536	NRSA63J-394N	RESISTOR	390KΩ,1/16W
R537	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R538	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R539	NRSA63J-561N	RESISTOR	560Ω,1/16W
R540	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R541	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R542	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R543	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R544	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R545	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R547	NRSA63J-561N	RESISTOR	560Ω,1/16W
R548	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R549	NRSA63J-221N	RESISTOR	220Ω,1/16W
R550	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R551	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R552	NRSA63J-471N	RESISTOR	470Ω,1/16W
R553	NRSA63J-821N	RESISTOR	820Ω,1/16W
R554	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R555	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R556	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R557	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R558	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R559	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R560	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R561	NRSA63J-271N	RESISTOR	270Ω,1/16W
R562	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R563	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R564	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R565	NRSA63J-621N	RESISTOR	620Ω,1/16W
R571	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R572	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R573	NRSA63J-821N	RESISTOR	820Ω,1/16W
R574	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R575	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R576	NRSA63J-821N	RESISTOR	820Ω,1/16W
R577	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R578	NRSA63J-331N	RESISTOR	330Ω,1/16W
R579	NRSA63J-681N	RESISTOR	680Ω,1/16W
R580	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R581	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R582	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R583	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R584	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R585	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R586	NRSA63J-821N	RESISTOR	820Ω,1/16W
R587	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R588	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R589	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R590	NRSA63J-391N	RESISTOR	390Ω,1/16W
R591	NRSA63J-391N	RESISTOR	390Ω,1/16W
R592	NRSA63J-561N	RESISTOR	560Ω,1/16W
R593	NRSA63J-821N	RESISTOR	820Ω,1/16W
R594	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R595	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R596	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R597	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R598	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R599	NRSA63J-680N	RESISTOR	68Ω,1/16W
R600	NRSA63J-221N	RESISTOR	220Ω,1/16W
R601	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R602	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R603	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R604	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R605	NRSA63J-821N	RESISTOR	820Ω,1/16W
R606	NRSA63J-561N	RESISTOR	560Ω,1/16W
R607	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R608	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R609	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R610	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R612	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R613	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R614	NRSA63J-561N	RESISTOR	560Ω,1/16W
R615	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R651	NVP1201-222N	V RESISTOR,EE BURST LEVEL	2.2KΩ,1/2W
R652	NVP1201-102N	V RESISTOR,1H DL SIG LEVEL	1KΩ,1/2W
R653	NVP1201-103N	V RESISTOR,PB Y LEVEL	10KΩ,1/2W
R654	NVP1201-103N	V RESISTOR,WHITE CLIP	10KΩ,1/2W
R655	NVP1201-103N	V RESISTOR,CARRIER	10KΩ,1/2W
R656	NVP1201-103N	V RESISTOR,DEVIATION	10KΩ,1/2W
R657	NVP1201-101N	V RESISTOR,REC COLOR LEVEL	100Ω,1/2W
R658	NVP1201-471N	V RESISTOR,PB COLOR LEVEL	470Ω,1/2W
R659	NVP1201-222N	V RESISTOR,REC FM LEVEL	2.2KΩ,1/2W
R660	NVP1201-472N	V RESISTOR,EP VIDEO EQ	4.7KΩ,1/2W
R661	NVP1201-472N	V RESISTOR,SP VIDEO EQ	4.7KΩ,1/2W
R662	NVP1201-103N	V RESISTOR,EE Y LEVEL	10KΩ,1/2W
C2	NEE21DM-475RS	TANTAL CAPACITOR	4.7μF,20V
C3	NEE21DM-475RS	TANTAL CAPACITOR	4.7μF,20V
C4	NEE21DM-475RS	TANTAL CAPACITOR	4.7μF,20V
C5	NEE21DM-475RS	TANTAL CAPACITOR	4.7μF,20V
C7	NEE21AM-335RS	TANTAL CAPACITOR	3.3μF,10V
C8	NEE21DM-475RS	TANTAL CAPACITOR	4.7μF,20V
C9	NEE21DM-475RS	TANTAL CAPACITOR	4.7μF,20V
C10	NEE21AM-335RS	TANTAL CAPACITOR	3.3μF,10V
C16	QCTA1CH-5R0	CAPACITOR	5PF,16V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C17	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C18	QCTA1CH-271	CAPACITOR	270PF,16V
	C19	QCTA1CH-181	CAPACITOR	180PF,16V
	C20	QCTA1CH-181	CAPACITOR	180PF,16V
	C21	QCTA1CH-681	CAPACITOR	680PF,16V
	C32	YU40688-336N	E CAPACITOR	33μF
	C33	YU41614-226N	E CAPACITOR	22μF
	C34	NEA31HM-105NZ	E CAPACITOR	1μF,50V
	C35	NEA31CM-106N	E CAPACITOR	10μF,16V
	C38	NEA31HM-105NZ	E CAPACITOR	1μF,50V
	C39	NEH10JM-226N	E CAPACITOR	22μF,6.3V
	C40	NCB31HK-472A	CAPACITOR	0.0047μF,50V
	C41	NEH11CM-106N	E CAPACITOR	10μF,16V
	C43	NCB31HK-182A	CAPACITOR	0.0018μF,50V
	C44	QCYA1HK-333	CAPACITOR	0.033μF,50V
	C45	NCS31HJ-221A	CAPACITOR	220PF,50V
	C46	NEA31HM-105NZ	E CAPACITOR	1μF,50V
	C47	NCB31HK-272A	CAPACITOR	0.0027μF,50V
	C48	NCB31HK-681A	CAPACITOR	680PF,50V
	C49	NEA30GM-226N	E CAPACITOR	22μF,4.0V
	C50	NCR31CK-223A	CAPACITOR	0.022μF,16V
	C51	YU40688-336N	E CAPACITOR	33μF
	C52	NEE21EM-474RS	TANTAL CAPACITOR	0.47μF,25V
	C53	NCB31HK-682A	CAPACITOR	0.0068μF,50V
	C54	NCB31HK-332A	CAPACITOR	0.0033μF,50V
	C55	NEE21VM-104RS	TANTAL CAPACITOR	0.1μF,35V
	C57	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C58	NCB31HK-471A	CAPACITOR	470PF,50V
	C61	NCT08CH-101A	CAPACITOR	100PF
	C62	NCT08CH-101A	CAPACITOR	100PF
	C63	NCT08CH-101A	CAPACITOR	100PF
	C64	NCT08CH-101A	CAPACITOR	100PF
	C65	NCT08CH-101A	CAPACITOR	100PF
	C66	NCT08CH-101A	CAPACITOR	100PF
	C67	NCT08CH-101A	CAPACITOR	100PF
	C68	NCT08CH-101A	CAPACITOR	100PF
	C71	YU40688-336N	E CAPACITOR	33μF
	C72	NCB31HK-392A	CAPACITOR	0.0039μF,50V
	C73	NCS31HJ-561A	CAPACITOR	560PF,50V
	C74	QFZ9011-333	CAPACITOR	0.033μF
	C75	NCB31HK-471A	CAPACITOR	470PF,50V
	C76	NEE21CM-105RS	TANTAL CAPACITOR	1μF,16V
	C77	NEE20GM-106RS	TANTAL CAPACITOR	10μF,4.0V
	C78	NEE21CM-105RS	TANTAL CAPACITOR	1μF,16V
	C101	NEH11CM-106N	E CAPACITOR	10μF,16V
	C102	NEH11CM-106N	E CAPACITOR	10μF,16V
	C103	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C105	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C106	NCB31HK-392A	CAPACITOR	0.0039μF,50V
	C110	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C111	QCY81EK-104	CAPACITOR	0.1μF,25V
	C112	NCB31HK-222A	CAPACITOR	0.0022μF,50V
	C113	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C114	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C115	NCB31HK-102A	CAPACITOR	0.001μF,50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C116	QEPA1CM-226	E CAPACITOR	22μF,16V
	C117	QCF81CZ-105	CAPACITOR	1μF,16V
	C120	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C121	QCY81CK-224ZLM	CAPACITOR	0.22μF,16V
	C122	NCB31HK-222A	CAPACITOR	0.0022μF,50V
	C123	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C124	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C125	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C126	QEPA1CM-106	E CAPACITOR	10μF,16V
	C127	QCF81CZ-105	CAPACITOR	1μF,16V
	C128	QCF81CZ-105	CAPACITOR	1μF,16V
	C132	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C134	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C135	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C136	NCT06CH-101A	CAPACITOR	100PF
	C138	NCB31HK-562A	CAPACITOR	0.0056μF,50V
	C139	QCF81CZ-105	CAPACITOR	1μF,16V
	C140	QCF81CZ-105	CAPACITOR	1μF,16V
	C141	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C147	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C148	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C150	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C151	NCR21CK-473A	CAPACITOR	0.047μF,16V
	C152	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C153	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C155	NEH11CM-106N	E CAPACITOR	10μF,16V
	C156	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C160	NEH11CM-106N	E CAPACITOR	10μF,16V
	C161	NCT06CH-101A	CAPACITOR	100PF
	C175	NCB31CK-333A	CAPACITOR	0.033μF,16V
	C176	NCB31CK-333A	CAPACITOR	0.033μF,16V
	C177	NCB31CK-333A	CAPACITOR	0.033μF,16V
	C178	NCB31HK-332A	CAPACITOR	0.0033μF,50V
	C252	NEH11HM-474NZ	E CAPACITOR	0.47μF,50V
	C253	NCB31HK-331A	CAPACITOR	330PF,50V
	C255	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C257	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C258	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C259	QCF81CZ-105	CAPACITOR	1μF,16V
	C260	QCF81CZ-105	CAPACITOR	1μF,16V
	C261	QCF81CZ-105	CAPACITOR	1μF,16V
	C265	NCR21CK-473A	CAPACITOR	0.047μF,16V
	C266	NEH11HM-105NZ	E CAPACITOR	1μF,50V
	C267	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C268	NCB31HK-681A	CAPACITOR	680PF,50V
	C269	NCB31HK-332A	CAPACITOR	0.0033μF,50V
	C276	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C277	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C278	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C279	QCF81CZ-105	CAPACITOR	1μF,16V
	C280	QCF81CZ-105	CAPACITOR	1μF,16V
	C281	QCF81CZ-105	CAPACITOR	1μF,16V

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
C282	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C283	QCF81CZ-105	CAPACITOR	1μF,16V
C285	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C286	NCS31HJ-100A	CAPACITOR	10PF,50V
C301	YU40688-336N	E CAPACITOR	33μF,5.5V
C302	YU40688-476N	E CAPACITOR	47μF,5.5V
C303	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C304	NCB31EK-103A	CAPACITOR	0.01μF,25V
C305	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C306	NCB31EK-103A	CAPACITOR	0.01μF,25V
C307	NCB31EK-103A	CAPACITOR	0.01μF,25V
C308	NCB31EK-103A	CAPACITOR	0.01μF,25V
C309	NCS31HJ-220A	CAPACITOR	22PF,50V
C310	NCS31HJ-220A	CAPACITOR	22PF,50V
C311	NCB31EK-103A	CAPACITOR	0.01μF,25V
C312	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C313	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C314	NCB31EK-472A	CAPACITOR	0.0047μF,25V
C315	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C316	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C317	NCB31EK-103A	CAPACITOR	0.01μF,25V
C320	NEH11CM-106N	E CAPACITOR	10μF,16V
C401	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C402	NCB31EK-223A	CAPACITOR	0.022μF,25V
C403	QCFA1CZ-105	CAPACITOR	1μF,16V
C404	QCFA1CZ-105	CAPACITOR	1μF,16V
C405	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C406	NCT06CH-101A	CAPACITOR	100PF
C501	NEA30GM-226N	E CAPACITOR	22μF,4.0V
C502	NCS31HJ-150A	CAPACITOR	15PF,50V
C503	NEA30GM-226N	E CAPACITOR	22μF,4.0V
C504	NCB31EK-103A	CAPACITOR	0.01μF,25V
C505	NCB31EK-103A	CAPACITOR	0.01μF,25V
C506	NCB31EK-103A	CAPACITOR	0.01μF,25V
C507	YU40688-476N	E CAPACITOR	47μF,5.5V
C508	NCB31EK-103A	CAPACITOR	0.01μF,25V
C509	NCT06CH-7R0A	CAPACITOR	7PF
C511	YU41815	E CAPACITOR	
	or QETA0JM-108	E CAPACITOR	1000μF,6.3V
C513	YU40688-476N	E CAPACITOR	47μF
C514	NCB31EK-103A	CAPACITOR	0.01μF,25V
C515	QEF81AM-105	TANTAL CAPACITOR	1μF,10V
C516	NEA31HM-474N	E CAPACITOR	0.47μF,50V
C517	NEA31HM-105NZ	E CAPACITOR	1μF,50V
C518	YU40688-476N	E CAPACITOR	47μF,5.5V
C519	NCB31EK-103A	CAPACITOR	0.01μF,25V
C520	NEA31HM-474N	E CAPACITOR	0.47μF,50V
C521	NCS31HJ-470A	CAPACITOR	47PF,50V
C522	NEA31EM-475NZ	E CAPACITOR	4.7μF,25V
C523	NEA31EM-475NZ	E CAPACITOR	4.7μF,25V
C524	NCB31EK-103A	CAPACITOR	0.01μF,25V
C525	NCB31EK-103A	CAPACITOR	0.01μF,25V
C526	NCS31HJ-330A	CAPACITOR	33PF,50V
C527	NCB31EK-103A	CAPACITOR	0.01μF,25V
C528	NCS31HJ-560A	CAPACITOR	56PF,50V
C529	NCB31EK-103A	CAPACITOR	0.01μF,25V
C530	NCS31HJ-270A	CAPACITOR	27PF,50V
C531	NEA31EM-475NZ	E CAPACITOR	4.7μF,25V
C532	NCS31HJ-120A	CAPACITOR	12PF,50V
C533	YU40688-476N	E CAPACITOR	47μF,5.5V
C534	NCB31EK-103A	CAPACITOR	0.01μF,25V
C535	NCS31HJ-471A	CAPACITOR	470PF,50V
C536	NCS31HJ-680A	CAPACITOR	68PF,50V
C537	NCS31HJ-270A	CAPACITOR	27PF,50V
C538	NCS31HJ-121A	CAPACITOR	120PF,50V
C539	NCS31HJ-270A	CAPACITOR	27PF,50V
C540	NCS31HJ-6R0A	CAPACITOR	6PF,50V
C541	NCB31EK-103A	CAPACITOR	0.01μF,25V
C542	NCB31EK-103A	CAPACITOR	0.01μF,25V
C543	NCR31CK-153A	CAPACITOR	0.015μF,16V
C544	NEA31VM-225N	E CAPACITOR	2.2μF,35V
C545	NEA31EM-475NZ	E CAPACITOR	4.7μF,25V
C546	QEF81VM-104	TANTAL CAPACITOR	0.1μF,35V
C547	QEF81VM-104	TANTAL CAPACITOR	0.1μF,35V
C548	NEH11CM-106N	E CAPACITOR	10μF,16V
C550	NCT06CH-3R0A	CAPACITOR	3PF
C551	NCS31HJ-181A	CAPACITOR	180PF,50V
C552	NCR31CK-153A	CAPACITOR	0.015μF,16V
C553	NCR31CK-273A	CAPACITOR	0.027μF,16V
C554	NCR31CK-273A	CAPACITOR	0.027μF,16V
C555	NCB31EK-103A	CAPACITOR	0.01μF,25V
C556	NCB31EK-103A	CAPACITOR	0.01μF,25V
C557	NCB31EK-103A	CAPACITOR	0.01μF,25V
C558	YU40688-476N	E CAPACITOR	47μF,5.5V
C559	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C560	NEA31HM-105NZ	E CAPACITOR	1μF,50V
C561	NCT07CH-6R0A	CAPACITOR	6PF
C562	NEA31VM-225N	E CAPACITOR	2.2μF,35V
C563	NCB31HK-152A	CAPACITOR	0.0015μF,50V
C564	YU40688-476N	E CAPACITOR	47μF,5.5V
C565	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C566	NCT06CH-9R0A	CAPACITOR	9PF
C567	NCT07CH-220A	CAPACITOR	22PF
C569	NCB31EK-103A	CAPACITOR	0.01μF,25V
C570	NEA31VM-225N	E CAPACITOR	2.2μF,35V
C571	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C572	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C573	NCB31EK-103A	CAPACITOR	0.01μF,25V
C574	NCB31EK-103A	CAPACITOR	0.01μF,25V
C575	NEA31VM-225N	E CAPACITOR	2.2μF,35V
C576	QEF81VM-224	TANTAL CAPACITOR	0.22μF,35V
C577	NCB31EK-103A	CAPACITOR	0.01μF,25V
C578	NEA31VM-225N	E CAPACITOR	2.2μF,35V
C579	NCB31EK-103A	CAPACITOR	0.01μF,25V
C580	NEA31CM-106N	E CAPACITOR	10μF,16V
C581	NCB31EK-103A	CAPACITOR	0.01μF,25V
C582	NCT07CH-100A	CAPACITOR	10PF
C586	NCB31EK-103A	CAPACITOR	0.01μF,25V
C587	NCS31HJ-470A	CAPACITOR	47PF,50V
C588	NCS31HJ-220A	CAPACITOR	22PF,50V
C589	NCB31EK-103A	CAPACITOR	0.01μF,25V
C590	YU40688-476N	E CAPACITOR	47μF,5.5V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C591	NCS31HJ-330A	CAPACITOR	33PF,50V
	C592	NCS31HJ-181A	CAPACITOR	180PF,50V
	C593	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C594	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C595	NCS31HJ-181A	CAPACITOR	180PF,50V
	C596	NCS31HJ-151A	CAPACITOR	150PF,50V
	C598	NCS31HJ-560A	CAPACITOR	56PF,50V
	C599	NCS31HJ-300A	CAPACITOR	30PF,50V
	C600	NCS31HJ-820A	CAPACITOR	82PF,50V
	C601	NCS31HJ-330A	CAPACITOR	33PF,50V
	C602	NCS31HJ-120A	CAPACITOR	12PF,50V
	C603	YU40688-476N	E CAPACITOR	47μF,5.5V
	C604	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C605	NCS31HJ-560A	CAPACITOR	56PF,50V
	C606	NCB31EK-103A	CAPACITOR	0.01μF,25V
	L1	YU41135-470	COIL	47μH
	L2	QRS188J-0R0Y	RESISTOR	0Ω,1/8W
	L16	YU41135-470	COIL	47μH
⚠	L17	YU41368	OSC COIL	
	L18	PU58201-1R2K	COIL	1.2μH
	L32	PU56197-2-P	EQUALIZER	
	L33	YU41135-221K	COIL	220μH
⚠	L34	YU41391	OSC COIL	
	L101	YU41134-270JY	COIL	27μH
	L501	YU41135-470	COIL	47μH
	L503	YU41135-470	COIL	47μH
	L504	YU41135-470	COIL	47μH
	L505	YU41134-121J	COIL	120μH
	L506	YU41134-121J	COIL	120μH
	L507	YU41134-820J	COIL	82μH
	L508	YU41135-470	COIL	47μH
	L509	YU41134-180J	COIL	18μH
	L510	YU40941-682	COIL	6.8mH
	L511	PU57620-102K	COIL	1mH
	L512	YU41134-331J	COIL	330μH
	L513	YU41134-220J	COIL	22μH
		or PU58201-220J	COIL	22μH
	L514	YU41134-220J	COIL	22μH
		or PU58201-220J	COIL	22μH
	L515	YU41134-121J	COIL	120μH
	L516	YU41134-390J	COIL	39μH
	L517	YU41134-220J	COIL	22μH
	L518	YU41134-331J	COIL	330μH
	L519	YU41134-181JY	COIL	180μH
	L520	YU41134-680J	COIL	68μH
	L521	YU41134-270JY	COIL	27μH
	L523	YU41134-680J	COIL	68μH
	L524	YU41134-150J	COIL	15μH
	L525	YU41134-150J	COIL	15μH
	L526	YU41135-470	COIL	47μH
	L527	YU41135-470	COIL	47μH
	L528	YU41134-330JY	COIL	33μH
		or PU58201-330J	COIL	33μH

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	L529	YU41134-121J	COIL	120μH
		or PU58201-121J	COIL	120μH
	L530	YU41134-331J	COIL	330μH
	L531	YU41135-470	COIL	47μH
	LPF501	YU41687	LOW PASS FILTER	
	LPF502	YU41668	LOW PASS FILTER	
	LPF503	YU41688	LOW PASS FILTER	
	BPF101	YU41366	BAND PASS FILTER,FT101	
	BPF102	YU41364	BAND PASS FILTER,FT102	
	BPF501	YU41639	BAND PASS FILTER	
	DL501	PEVB0369	1H DELAY LINE	
⚠	X301	YU41379	CRYSTAL RESONATOR	
⚠	X501	PU60323	CRYSTAL RESONATOR	
	SW1	YU41393	PUSH SWITCH	
	DD1	PEAS2033	DC-DC CONVERTER	
	PS301	SIM-125ST	CHIP LED	
	SLD1	YU41808	SHIELD PLATE	
	SLD2	YU41805	SHIELD PLATE	
	SPC1	YQM30029-44	SPACER	
	SPC2	YQM30029-64	SPACER	
	SPC3	YQM30029-60	SPACER	
	SPC4	PU59915-102	SPACER	
	WR1	YU41725	FE FPC	
	TP1	YU41389-A	TEST PIN,GND	
	TP2	YU41389-A	TEST PIN,REG 5V	
	TP3	YU41389-A	TEST PIN,REG 8V	
	TP4	YU41389-A	TEST PIN,REG 12V	
	TP32	YU41389-A	TEST PIN,AUDIO OUT	
	TP33	YU41389-A	TEST PIN,REC BIAS	
	TP34	YU41389-A	TEST PIN,REC BIAS GND	
	TP101	YU41389-A	TEST PIN,PB CTL	
	TP102	YU41389-A	TEST PIN,CAPSTAN FG	
	TP103	YU41389-A	TEST PIN,AVG FM ENV	
	TP104	YU41389-A	TEST PIN,DRUM MON	
	TP105	YU41389-A	TEST PIN,CAPSTAN MON	
	TP106	YU41389-A	TEST PIN,DRUM PG/FG	
	TP109	YU41389-A	TEST PIN,DRUM FF	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
TP401	YU41389-A	TEST PIN,HD	
TP402	YU41389-A	TEST PIN,Y OUT	
TP501	PU56278	TEST PIN,GND	
TP502	YU41389-A	TEST PIN,EE	
TP503	YU41389-A	TEST PIN,VIDEO OUT	
TP504	YU41389-A	TEST PIN,PB 1H DL Y	
TP505	YU41389-A	TEST PIN,EMPHASIS OUT	
TP506	YU41389-A	TEST PIN,PB FM	
TP507	YU41389-A	TEST PIN,REC FM OUT	
TP508	YU41389-A	TEST PIN,PB COLOR	
TP510	YU41389-A	TEST PIN,REC COLOR OUT	
TP511	YU41389-A	TEST PIN,LPF OUT	
CN1	YU41356-5	CAP HOUSING	
CN2	YU41359-6	CAP HOUSING,(BOARD TO BOARD)	
CN3	YU41356-5	CAP HOUSING	
CN4	YU41355-7	CAP HOUSING	
CN5	YU41361-12	CAP HOUSING,(BOARD TO BOARD)	
CN6	YU41356-4	CAP HOUSING	
CN7	YU41355-15	CAP HOUSING	
CN8	YU41355-15	CAP HOUSING	
CN9	YU41356-2	CAP HOUSING	
CN10	YU41359-14	CAP HOUSING,(BOARD TO BOARD)	
CN12	YU41356-5	CAP HOUSING	
CN13	YU41354-3	CAP HOUSING	
CN14	YU41359-16	CAP HOUSING,(BOARD TO BOARD)	
CN15	YU41359-10	CAP HOUSING,(BOARD TO BOARD)	
CN16	YU41356-2	CAP HOUSING	
CN17	YU41356-3	CAP HOUSING	
CN18	YU41356-2	CAP HOUSING	
CN19	YU41359-6	CAP HOUSING,(BOARD TO BOARD)	
CN20	YU41740-6	CAP HOUSING,(BOARD TO BOARD)	
⚠ CP1	ICP-N25	CIRCUIT PROTECTOR	
⚠ CP2	ICP-N20	CIRCUIT PROTECTOR	
⚠ CP3	ICP-N38	CIRCUIT PROTECTOR	
⚠ CP4	ICP-N20	CIRCUIT PROTECTOR	
⚠ CP5	ICP-N38	CIRCUIT PROTECTOR	

– REF 5V BOARD ASSEMBLY –

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA1	YB20407A	REF 5V BOARD ASSY	
IC410	UPC1093T	IC	
R411	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R412	NRVA63D-103N	RESISTOR	10KΩ,1/16W
R413	NRVA63D-103N	RESISTOR	10KΩ,1/16W

– DE CUP BOARD ASSEMBLY –

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA2	YB20405A-01	DE CUP BOARD ASSY	
R66	QRSA08J-820YN	RESISTOR	82Ω,1/10W
R67	QRSA08J-820YN	RESISTOR	82Ω,1/10W
R68	QRSA08J-820YN	RESISTOR	82Ω,1/10W
C79	YU41415-J156BW	TANTAL CAPACITOR	
C80	YU41415-J156BW	TANTAL CAPACITOR	

– LIMIT SUB BOARD ASSEMBLY –

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA3	YB40051B	LIMIT SUB BOARD ASSY	
Q542	FMY1	TRANSISTOR	

– RESET BOARD ASSEMBLY –

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA4	YB20429A	RESET BOARD ASSY	
IC503	TC4S81F	IC	
	or TC4S71F	IC	
D503	MA141WK	DIODE	
R616	QRSA08J-102	RESISTOR	1KΩ,1/10W

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JACK BOARD ASSEMBLY <02>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	YB20359A-02	JACK BOARD ASSY	
IC1	M5282FP	IC	
D1	RLZ8.2B	Z. DIODE	
R1	QRSA08J-562Y	RESISTOR	5.6KΩ,1/10W
R2	QRSA08J-473	RESISTOR	47KΩ,1/10W
R3	QRSA08J-102	RESISTOR	1KΩ,1/10W
R4	QRSA08J-221Y	RESISTOR	220Ω,1/10W
R5	QRSA08J-223Y	RESISTOR	22KΩ,1/10W
R6	QRSA08J-102	RESISTOR	1KΩ,1/10W
R7	QRSA08J-0R0	RESISTOR	0Ω,1/10W
R8	QRSA08J-222	RESISTOR	2.2KΩ,1/10W
R9	QRSA08J-682	RESISTOR	6.8KΩ,1/10W
R10	QRSA08J-103Y	RESISTOR	10KΩ,1/10W
R11	NRD187J-100N	RESISTOR	10Ω,1/8W
R12	QRSA08J-104	RESISTOR	100KΩ,1/10W
R13	QRSA08J-221Y	RESISTOR	220Ω,1/10W
R14	QRSA08J-221Y	RESISTOR	220Ω,1/10W
R15	NRD187J-750N	RESISTOR	75Ω,1/8W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R16	NRD187J-102N	RESISTOR	1KΩ,1/8W
R17	NRD187J-102N	RESISTOR	1KΩ,1/8W
C1	YU40688-476N	E CAPACITOR	47μF,5.5V
C2	YU40688-476N	E CAPACITOR	47μF,5.5V
C3	NEA31EM-475N	E CAPACITOR	4.7μF,25V
C4	QCTA1CH-101	CAPACITOR	100PF,16V
C5	NEA31VM-335N	E CAPACITOR	3.3μF,35V
C6	QCSA1HJ-681	CAPACITOR	680PF,50V
C7	YU40688-476N	E CAPACITOR	47μF,5.5V
C8	NEA31EM-475N	E CAPACITOR	4.7μF,25V
C9	QEKA0HM-477	E CAPACITOR	470μF,5.5V
C10	QCYA1HK-222	CAPACITOR	0.0022μF,50V
C11	QCYA1HK-222	CAPACITOR	0.0022μF,50V
C12	NEH11CM-106N	E CAPACITOR	10μF,16V
C18	NEE21CM-225RS	TANTAL CAPACITOR	2.2μF,16V
L1	QRS188J-0R0Y	RESISTOR	0Ω,1/8W
J1	YU41635	JACK BOX,JACK1	
WR1	ML-Y00494B	JACK PWB WIRE,CN3	
CN1	YU41361-6	CAP HOUSING,(BOARD TO BOARD)	
CN2	YU41361-6	CAP HOUSING,(BOARD TO BOARD)	

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PRE/REC BOARD ASSEMBLY <03>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	BW7838A	PRE/REC ASSY

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SENSOR BOARD ASSEMBLY <04>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	YQ30763A-2	SENSOR BOARD ASSY
SPC1	YQ41872	SPACER

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TRIGGER BOARD ASSEMBLY <05>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	YB20360A-01	TRIGGER BOARD ASSY
SW1	YU41685	TACT SWITCH

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END SENSOR BRACKET ASSEMBLY <08>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	YQ41594B-6	END SENSOR BRACKET ASSY
BK1	YQ30614-1-4	END SENSER BRACKET

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CPU BOARD ASSEMBLY <11>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	YB20338B-03	CPU BOARD ASSY
IC1	M37120M6-102FP	IC
IC2	CAT93C46K-XE	IC
IC3	S-8054HN-CB	IC
IC4	S-8052ANB-NE	IC
IC5	AN1393S	IC
IC6	TC7S04F	IC
IC7	S-81250HG-RD	IC
IC8	TC4S584F	IC
Q1	DTC124EU	TRANSISTOR
D1	RB451F	DIODE
⚠ D2	MA704	DIODE
⚠ D3	MA704	DIODE
⚠ D4	MA704	DIODE
D5	RD7.5M(B2)	ZENER DIODE
D7	RD7.5M(B2)	ZENER DIODE
D8	RD7.5M(B2)	ZENER DIODE

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R1	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R2	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R4	NRSA63J-100N	RESISTOR	10Ω,1/16W
R5	NRSA63J-100N	RESISTOR	10Ω,1/16W
R6	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R7	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R8	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R9	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R10	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R11	NRSA63J-103N	RESISTOR	10KΩ,1/16W
⚠ R12	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R13	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R14	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R15	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R16	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R17	NRSA63J-471N	RESISTOR	470Ω,1/16W
R18	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R19	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R20	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R21	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R22	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R23	NRSA63J-471N	RESISTOR	470Ω,1/16W
R24	NRSA63J-471N	RESISTOR	470Ω,1/16W
R25	NRSA63J-471N	RESISTOR	470Ω,1/16W
R26	NRSA63J-471N	RESISTOR	470Ω,1/16W
R27	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R28	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R29	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R30	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R31	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R32	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R33	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R34	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R35	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R36	NRSA63J-125N	RESISTOR	1.2MΩ,1/16W
R37	NRSA63J-125N	RESISTOR	1.2MΩ,1/16W
R38	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R39	NRSA63J-155N	RESISTOR	1.5MΩ,1/16W
R41	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R42	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R43	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R44	NRSA63J-100N	RESISTOR	10Ω,1/16W
R45	NRSA63J-100N	RESISTOR	10Ω,1/16W
R46	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R47	NRSA63J-101N	RESISTOR	100Ω,1/16W
R48	NRSA63J-101N	RESISTOR	100Ω,1/16W
R49	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R50	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R51	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R52	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R53	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R54	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R55	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R56	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R57	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R58	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R59	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R60	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R61	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R62	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R65	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R66	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R67	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R72	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R73	NRSA63J-100N	RESISTOR	10Ω,1/16W
R74	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R75	QRSA08J-0R0	RESISTOR	0Ω,1/10W
R76	QRSA08J-0R0	RESISTOR	0Ω,1/10W
R77	QRD161J-102	RESISTOR	1KΩ,1/6W
C1	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C2	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C3	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C4	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C5	QCFA1CZ-105	CAPACITOR	1μF,16V
C6	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C7	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C8	NCT07CH-300A	CAPACITOR	30PF
C10	PU56274-200	TRIMMER CAPACITOR,IND POSITION	20PF
	or PECA0779-200X	TRIMMER CAPACITOR,IND POSITION	
C11	NCT07CH-150A	CAPACITOR	15PF
C12	NCT07CH-120A	CAPACITOR	12PF
C15	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C16	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C17	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C18	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C19	NCB31EK-103A	CAPACITOR	0.01μF,25V
L1	YU40740-220K	COIL	22μH
L3	YU40740-390K	COIL	39μH
⚠ X1	YU40141	CRYSTAL RESONATOR	
⚠ X2	PEVB0363-P	C RESONATER	
CN-11	YU41361-16	CAP HOUSING,(BOARD TO BOARD)	
CN-12	YU41361-30	CAP HOUSING,(BOARD TO BOARD)	
CN-13	YU41359-14	CAP HOUSING,(BOARD TO BOARD)	
CN-14	YU41361-16	CAP HOUSING,(BOARD TO BOARD)	
CN-15	YU41356-7	CAP HOUSING,(BOARD TO BOARD)	
CN-16	YU41356-9	CAP HOUSING,(BOARD TO BOARD)	

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VIDEO BOARD ASSEMBLY <12>

PWBA	YB20339A-01	VIDEO BOARD ASSY	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
IC1	HA118130MA	IC	
IC2	BA7606F	IC	
IC3	TC7S04F	IC	
IC4	TC7S04F	IC	
IC5	PEIC2396	IC	
	or MC8180B	IC	
IC11	BU2728K	IC	
IC12	MN4464S-08LL	IC	
	or FCB61C65LL	IC	
IC31	JCY0011	IC	
IC32	LM393DB-WE	IC	
Q1	2SC3936(BC)	TRANSISTOR	
Q2	2SD1819(QR)	TRANSISTOR	
Q3	2SA1532(BC)	TRANSISTOR	
Q4	2SA1532(BC)	TRANSISTOR	
Q5	2SC3936(BC)	TRANSISTOR	
Q6	2SA1532(BC)	TRANSISTOR	
Q7	2SC3936(BC)	TRANSISTOR	
Q8	2SD1819(QR)	TRANSISTOR	
Q9	2SC3936(BC)	TRANSISTOR	
Q10	2SC3936(BC)	TRANSISTOR	
Q12	2SC3936(BC)	TRANSISTOR	
Q13	2SC3936(BC)	TRANSISTOR	
Q14	2SC3936(BC)	TRANSISTOR	
Q15	2SC3936(BC)	TRANSISTOR	
Q16	2SC3936(BC)	TRANSISTOR	
Q17	2SC3936(BC)	TRANSISTOR	
Q18	2SC3936(BC)	TRANSISTOR	
Q19	2SC3936(BC)	TRANSISTOR	
Q20	2SC3936(BC)	TRANSISTOR	
Q21	2SC3936(BC)	TRANSISTOR	
Q22	2SD1819(QR)	TRANSISTOR	
Q23	2SD1819(QR)	TRANSISTOR	
Q25	2SC3936(BC)	TRANSISTOR	
Q31	2SC3936(BC)	TRANSISTOR	
Q32	2SC3936(BC)	TRANSISTOR	
Q33	2SC3936(BC)	TRANSISTOR	
Q34	2SC3936(BC)	TRANSISTOR	
Q35	2SC3936(BC)	TRANSISTOR	
Q36	2SA1532(BC)	TRANSISTOR	
D2	MA141WA	DIODE	
D4	MA141WK	DIODE	
D10	MA366	DIODE	
D14	RB451F	DIODE	
R1	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R3	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R4	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R5	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R6	NVP1201-103N	V RESISTOR,R ENCODER BAL	10KΩ,1/2W
R7	NVP1201-103N	V RESISTOR,B ENCODER BAL	10KΩ,1/2W
R8	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R9	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R10	NRVA63D-153N	RESISTOR	15KΩ,1/16W
R11	NRVA63D-103N	RESISTOR	10KΩ,1/16W
R12	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R14	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R15	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R16	NRSA63J-362N	RESISTOR	3.6KΩ,1/16W
R17	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R18	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R19	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R21	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R22	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R23	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R24	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R25	NRSA63J-823N	RESISTOR	82KΩ,1/16W
R26	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R27	NVP1201-472N	V RESISTOR,B-Y LEVEL	4.7KΩ,1/2W
R28	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R29	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R30	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R31	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R32	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R35	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R36	NVP1201-472N	V RESISTOR,Y LEVEL	4.7KΩ,1/2W
R37	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R39	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R44	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R45	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R46	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R47	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R48	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R49	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R50	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R52	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R54	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R55	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R56	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R57	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R65	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R66	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R67	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R68	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R69	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R70	NRSA63J-911N	RESISTOR	910Ω,1/16W
R71	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R72	NRVA63D-103N	RESISTOR	10KΩ,1/16W
R73	NRVA63D-203N	RESISTOR	20KΩ,1/16W
R74	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R77	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R78	NRSA63J-912N	RESISTOR	9.1KΩ,1/16W
R79	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R80	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R81	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R82	NRVA63D-272N	RESISTOR	2.7KΩ,1/16W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R83	NRVA63D-273N	RESISTOR	27KΩ,1/16W
R84	NRVA63D-472N	RESISTOR	4.7KΩ,1/16W
R85	NVP1201-103N	V RESISTOR,BURST PHASE	10KΩ,1/2W
R86	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R87	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R88	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R89	NVP1201-472N	V RESISTOR,BURST LEVEL	4.7KΩ,1/2W
R91	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R94	NRSA63J-203N	RESISTOR	20KΩ,1/16W
R95	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R96	NRSA63J-162N	RESISTOR	1.6KΩ,1/16W
R97	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R98	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R99	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R100	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R101	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R102	NVP1201-103N	V RESISTOR,COLOR LEVEL	10KΩ,1/2W
R103	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R104	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R105	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R106	NRSA63J-752N	RESISTOR	7.5KΩ,1/16W
R111	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R112	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R115	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R116	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R117	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R118	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R123	NRSA63J-563N	RESISTOR	56KΩ,1/16W
R124	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R127	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R128	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R129	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R130	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R131	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R132	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R134	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R135	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R136	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R137	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R140	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R142	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R143	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R151	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R152	NRSA63J-393N	RESISTOR	39KΩ,1/16W
R153	NVP1201-473N	V RESISTOR,R GAIN	47KΩ,1/2W
R154	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R155	NRSA63J-393N	RESISTOR	39KΩ,1/16W
R156	NVP1201-473N	V RESISTOR,B GAIN	47KΩ,1/2W
R160	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R161	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R162	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R171	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R172	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R173	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R174	NRSA63J-203N	RESISTOR	20KΩ,1/16W
R175	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R176	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R177	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R178	NRSA63J-203N	RESISTOR	20KΩ,1/16W
R179	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R180	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R181	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R182	NRSA63J-363N	RESISTOR	36KΩ,1/16W
R183	NRSA63J-753N	RESISTOR	75KΩ,1/16W
R184	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R185	NRSA63J-363N	RESISTOR	36KΩ,1/16W
R187	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R190	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R191	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R192	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R195	NRSA63J-103N	RESISTOR	10KΩ,1/16W
B1	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
B2	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
C1	NCT07CH-101A	CAPACITOR	100PF
C2	QCFA1CZ-105	CAPACITOR	1μF,16V
C3	QCFA1CZ-105	CAPACITOR	1μF,16V
C5	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C6	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C7	NCR21CK-473A	CAPACITOR	0.047μF,16V
C8	NCR21CK-473A	CAPACITOR	0.047μF,16V
C9	NCR21CK-473A	CAPACITOR	0.047μF,16V
C10	NCR21CK-473A	CAPACITOR	0.047μF,16V
C11	NCR21CK-473A	CAPACITOR	0.047μF,16V
C12	NCR21CK-473A	CAPACITOR	0.047μF,16V
C13	NCR21CK-473A	CAPACITOR	0.047μF,16V
C16	NCR21CK-473A	CAPACITOR	0.047μF,16V
C17	NCR21CK-473A	CAPACITOR	0.047μF,16V
C22	NCT07CH-101A	CAPACITOR	100PF
C23	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C24	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C25	NCR21CK-473A	CAPACITOR	0.047μF,16V
C26	NCR21CK-473A	CAPACITOR	0.047μF,16V
C28	NCB31EK-103A	CAPACITOR	0.01μF,25V
C29	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C30	NCB31EK-103A	CAPACITOR	0.01μF,25V
C31	NCB31EK-103A	CAPACITOR	0.01μF,25V
C32	NCB31EK-103A	CAPACITOR	0.01μF,25V
C33	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C34	NCR21CK-473A	CAPACITOR	0.047μF,16V
C35	NCT07CH-101A	CAPACITOR	100PF
C37	NCB31EK-103A	CAPACITOR	0.01μF,25V
C38	NCB31EK-103A	CAPACITOR	0.01μF,25V
C39	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C40	NEA20JM-226N	E CAPACITOR	22μF,6.3V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C41	NCR21CK-473A	CAPACITOR	0.047μF,16V
C42	NCR21CK-473A	CAPACITOR	0.047μF,16V
C43	NCR21CK-473A	CAPACITOR	0.047μF,16V
C44	NCR21CK-473A	CAPACITOR	0.047μF,16V
C45	NCR21CK-473A	CAPACITOR	0.047μF,16V
C46	NCR21CK-473A	CAPACITOR	0.047μF,16V
C55	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C56	NCT07CH-101A	CAPACITOR	100PF
C57	NCT07CH-101A	CAPACITOR	100PF
C58	NCT07CH-101A	CAPACITOR	100PF
C59	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C60	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C61	NCB31EK-103A	CAPACITOR	0.01μF,25V
C71	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C73	NEE20GM-335RS	TANTAL CAPACITOR	3.3μF,4.0V
C74	NCT07CH-390A	CAPACITOR	39PF
C75	PU56274-200	TRIMMER CAPACITOR,TITLE POSITION	20PF
C76	NCT07CH-220A	CAPACITOR	22PF
C77	NCT07CH-5R0A	CAPACITOR	5PF
C78	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C79	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C83	NCB31EK-103A	CAPACITOR	0.01μF,25V
C89	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C91	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C92	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C93	NEE21AM-105RS	TANTAL CAPACITOR	1μF,10V
C100	NCT07CH-390A	CAPACITOR	39PF
L1	PU59188-220K	COIL	22μH
L2	YU40740-101K	COIL	100μH
L3	YU40740-220K	COIL	22μH
L4	YU41607-Y	INDUCTOR	
L5	YU40740-150K	COIL	15μH
L6	QRSA08J-0R0	RESISTOR	0Ω,1/10W
BPF1	YU41708	BAND PASS FILTER	
DL1	YU41628	DELAY LINE	
DL2	YU41629-2	DELAY LINE	
TP1	YU41389-A	TEST PIN,CNR	
TP2	YU41389-A	TEST PIN,B-Y	
TP3	YU41389-A	TEST PIN,R-Y	
TP4	YU41389-A	TEST PIN,V EDGE	
TP5	YU41389-A	TEST PIN,B	
TP6	YU41389-A	TEST PIN,YH	
TP7	YU41389-A	TEST PIN,FD OUT	
TP8	YU41389-A	TEST PIN,GND	
TP9	YU41389-A	TEST PIN,COH	
CN-21	YU41361-10	CAP HOUSING,(BOARD TO BOARD)	
CN-22	YU41359-30	CAP HOUSING,(BOARD TO BOARD)	
CN-23	YU41359-8	CAP HOUSING,(BOARD TO BOARD)	
CN-24	YU41359-30	CAP HOUSING,(BOARD TO BOARD)	

- Y CORR BOARD ASSEMBLY -

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA1	YB20400A	Y CORR BOARD ASSY	
Q1	2SC3936(BC)	TRANSISTOR	
Q2	2SC3936(BC)	TRANSISTOR	
Q3	2SC3936(BC)	TRANSISTOR	
Q4	2SC3936(BC)	TRANSISTOR	
Q5	2SC3936(BC)	TRANSISTOR	
R1	NRSA63J-162N	RESISTOR	1.6KΩ,1/16W
R2	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R3	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R4	NRSA63J-622N	RESISTOR	6.2KΩ,1/16W
R5	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R6	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R7	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R8	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R9	NRSA63J-622N	RESISTOR	6.2KΩ,1/16W
R10	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R11	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R12	NRSA63J-102N	RESISTOR	1KΩ,1/16W
C1	NCR21CK-473A	CAPACITOR	0.047μF,16V
C2	QEF80GM-475	TANTAL CAPACITOR	4.7μF,4.0V
C3	NCF31CZ-104A	CAPACITOR	0.1μF,16V
SPC1	PU59915-102	SPACER	
SPC2	YQM30029-54	SPACER	

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SSG BOARD ASSEMBLY <13>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	YB20404A	SSG BOARD ASSY
IC1	MN5152S	IC
	or MN5164S	IC
IC2	IR3P67A	IC
IC3	MSM6834MS	IC
IC4	MSM6832MS	IC
Q1	2SC3936(BC)	TRANSISTOR
Q2	2SA1532(BC)	TRANSISTOR
Q3	2SA1532(BC)	TRANSISTOR

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
Q4	2SC3936(BC)	TRANSISTOR	
Q5	2SA1532(BC)	TRANSISTOR	
Q6	2SC3936(BC)	TRANSISTOR	
Q8	2SA1532(BC)	TRANSISTOR	
Q9	2SC3936(BC)	TRANSISTOR	
Q10	2SA1532(BC)	TRANSISTOR	
Q11	2SC3936(BC)	TRANSISTOR	
Q12	2SA1532(BC)	TRANSISTOR	
Q13	2SC3936(BC)	TRANSISTOR	
Q15	2SC3936(BC)	TRANSISTOR	
Q16	2SA1532(BC)	TRANSISTOR	
Q17	2SC3936(BC)	TRANSISTOR	
Q18	2SC3936(BC)	TRANSISTOR	
D1	MA141WK	DIODE	
R1	YU41218-103NZ	V RESISTOR,1H DELAYED SIG LEVEL	
R2	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R3	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R4	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R5	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R6	NRSA63J-471N	RESISTOR	470Ω,1/16W
R7	NRSA63J-471N	RESISTOR	470Ω,1/16W
R8	YU41218-103NZ	V RESISTOR,CNR BALANCE	
R9	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R10	NRSA63J-471N	RESISTOR	470Ω,1/16W
R11	NRSA63J-471N	RESISTOR	470Ω,1/16W
R12	YU41218-103NZ	V RESISTOR,COLOR DET BAL	
R13	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R14	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R15	NRSA63J-474N	RESISTOR	470KΩ,1/16W
R16	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R17	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R18	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R19	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R21	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R22	YU41218-103NZ	V RESISTOR,R/B SEPA	
R23	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R24	NRSA63J-561N	RESISTOR	560Ω,1/16W
R25	NRSA63J-101N	RESISTOR	100Ω,1/16W
R26	NRSA63J-471N	RESISTOR	470Ω,1/16W
R27	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R28	NRSA63J-561N	RESISTOR	560Ω,1/16W
R29	NRSA63J-101N	RESISTOR	100Ω,1/16W
R30	NRSA63J-471N	RESISTOR	470Ω,1/16W
R31	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R32	NRSA63J-561N	RESISTOR	560Ω,1/16W
R33	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R34	NRSA63J-561N	RESISTOR	560Ω,1/16W
R35	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R36	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R37	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R38	NRSA63J-564N	RESISTOR	560KΩ,1/16W
R40	NRSA63J-101N	RESISTOR	100Ω,1/16W
R41	NRSA63J-102N	RESISTOR	1KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R42	NRSA63J-101N	RESISTOR	100Ω,1/16W
R43	NRSA63J-101N	RESISTOR	100Ω,1/16W
R44	NRSA63J-101N	RESISTOR	100Ω,1/16W
R45	NRSA63J-101N	RESISTOR	100Ω,1/16W
R46	NRSA63J-101N	RESISTOR	100Ω,1/16W
R47	NRSA63J-101N	RESISTOR	100Ω,1/16W
R48	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R49	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R50	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R51	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R52	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R54	NRSA63J-133N	RESISTOR	13KΩ,1/16W
R56	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R57	NRSA63J-681N	RESISTOR	680Ω,1/16W
R58	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R59	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R60	NRSA63J-203N	RESISTOR	20KΩ,1/16W
C1	NEA21CM-106N	E CAPACITOR	10μF,16V
C2	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C3	NCB31EK-103A	CAPACITOR	0.01μF,25V
C4	NCB31EK-103A	CAPACITOR	0.01μF,25V
C5	QCFA1CZ-105	CAPACITOR	1μF,16V
C6	NEE20JM-225RS	TANTAL CAPACITOR	2.2μF,6.3V
C7	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C8	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C9	NEA21CM-106N	E CAPACITOR	10μF,16V
C10	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C11	QCYA1EK-104	CAPACITOR	0.1μF,25V
C12	QCYA1EK-104	CAPACITOR	0.1μF,25V
C13	NEE20JM-225RS	TANTAL CAPACITOR	2.2μF,6.3V
C14	NCB31EK-103A	CAPACITOR	0.01μF,25V
C15	NCB31EK-103A	CAPACITOR	0.01μF,25V
C16	NEE20JM-225RS	TANTAL CAPACITOR	2.2μF,6.3V
C17	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C18	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C19	QCYA1EK-104	CAPACITOR	0.1μF,25V
C20	NEE20JM-475RS	TANTAL CAPACITOR	4.7μF,6.3V
C21	NEA20JM-107N	E CAPACITOR	100μF,6.3V
C22	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C23	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C24	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C25	NEE20JM-475RS	TANTAL CAPACITOR	4.7μF,6.3V
C26	NEE20JM-475RS	TANTAL CAPACITOR	4.7μF,6.3V
C27	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C28	NEE20JM-225RS	TANTAL CAPACITOR	2.2μF,6.3V
C29	NEE20JM-225RS	TANTAL CAPACITOR	2.2μF,6.3V
C30	NEE20JM-475RS	TANTAL CAPACITOR	4.7μF,6.3V
C31	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C32	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C33	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C34	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C35	NEA20JM-107N	E CAPACITOR	100μF,6.3V
C36	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C37	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C38	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C39	NCF31CZ-104A	CAPACITOR	0.1μF,16V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C40	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C41	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C42	NCT07CH-221A	CAPACITOR	220PF
C43	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C44	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C45	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C46	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C47	NCT07CH-560A	CAPACITOR	56PF
C48	NCT07CH-560A	CAPACITOR	56PF
C49	PU56274-200	TRIMMER CAPACITOR,OSC	20PF
	or PECA0779-200X	TRIMMER CAPACITOR,OSC	
C51	NCT07CH-100A	CAPACITOR	10PF
C52	NCT07CH-100A	CAPACITOR	10PF
C53	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C54	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C55	NCT07CH-100A	CAPACITOR	10PF
C56	QCYA1EK-104	CAPACITOR	0.1μF,25V
C57	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C58	NEA20JM-226N	E CAPACITOR	22μF,6.3V
L1	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
L2	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
L3	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
L4	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
L5	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
L6	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
L7	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
L8	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
L9	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
L10	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
L11	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
L12	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
LPF1	YU41618-R	LOW PASS FILTER	
	or PELN0427-R	LOW PASS FILTER	
	or PELN0382	LOW PASS FILTER	
LPF2	YU41619-Z	LOW PASS FILTER	
	or PELN0428-Z	LOW PASS FILTER	
	or PELN0383	LOW PASS FILTER	
LPF3	YU41619-Z	LOW PASS FILTER	
	or PELN0383	LOW PASS FILTER	
LPF4	YU41619-Z	LOW PASS FILTER	
	or PELN0383	LOW PASS FILTER	
LPF5	YU41620-2	LOW PASS FILTER	
LPF6	YU41621-2	LOW PASS FILTER	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
LPF7	YU41622-2	LOW PASS FILTER
X1	YU41617	CRYSTAL RESONATOR
CN-31	YU41361-14	CAP HOUSING,(BOARD TO BOARD)
CN-32	YU41358-30	CAP HOUSING,(BOARD TO BOARD)
CN-33	YU41359-16	CAP HOUSING,(BOARD TO BOARD)

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CCD BOARD ASSEMBLY <14>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	YB20341A-02	CCD BOARD ASSY	
IC2	MN3110SA	IC	
Q1	2SD1819(QR)	TRANSISTOR	
Q2	2SC4181	TRANSISTOR	
Q3	2SD1819(QR)	TRANSISTOR	
Q4	2SB1218(QR)	TRANSISTOR	
D1	MA141WK	DIODE	
D2	MA141WK	DIODE	
D3	MA141WK	DIODE	
D5	MA141WK	DIODE	
D6	MA141WK	DIODE	
R1	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R2	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R3	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R4	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R5	YU41218-104N	V RESISTOR,BLOOMING	
R6	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R7	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R8	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R9	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R10	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R11	YU41218-473N	V RESISTOR,RESET	
R12	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R13	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R14	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R15	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R16	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R17	NRSA63J-203N	RESISTOR	20KΩ,1/16W
R18	NRSA63J-512N	RESISTOR	5.1KΩ,1/16W
C1	NEA21CM-476N	E CAPACITOR	47μF,16V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C2	NEA21CM-106N	E CAPACITOR	10μF,16V
C3	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C4	NEA21CM-106N	E CAPACITOR	10μF,16V
C5	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C6	NEA21CM-106N	E CAPACITOR	10μF,16V
C7	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C8	NEE21CM-105RS	TANTAL CAPACITOR	1μF,16V
C9	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C10	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C11	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C12	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C13	NEA20JM-107N	E CAPACITOR	100μF,6.3V
C14	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C15	NEA21CM-106N	E CAPACITOR	10μF,16V
C16	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C17	NEA21CM-106N	E CAPACITOR	10μF,16V
C18	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C19	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C20	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C21	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C22	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C23	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C24	QCYA1EK-104	CAPACITOR	0.1μF,25V
L1	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
L2	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
L3	YU40740-220K	COIL	22μH
	or YU41135-220K	COIL	22μH
TP1	YU40581	TEST PIN,CCD OUT	
CN-41	YU41361-16	CAP HOUSING,(BOARD TO BOARD)	
CN-42	YU41616	CAP HOUSING	

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AF BOARD ASSEMBLY <15>

PWBA	YB20342A-03	AF BOARD ASSY	
IC1	MN12821(QR)	IC	
IC2	HA13489MP	IC	
IC3	MN18888JFGS	IC	
IC4	JCY0007	IC	
IC5	MM1036XF	IC	
IC6	LM358DB-WE	IC	
IC7	M5236ML	IC	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
IC11	LM324DB	IC	
Q1	2SB1132(QR)	TRANSISTOR	
Q2	DTA114EU	TRANSISTOR	
Q3	XP5601	TRANSISTOR	
Q5	XP2501	TRANSISTOR	
Q6	DTC114EU	TRANSISTOR	
Q11	2SB1218(QR)	TRANSISTOR	
Q12	2SD1819(QR)	TRANSISTOR	
D11	MA141WK	DIODE	
D12	MA28WA	DIODE	
R1	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R3	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R5	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R6	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R7	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R8	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R9	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R10	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R11	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R12	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R13	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R15	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R16	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R17	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R18	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R19	NRSA63J-683N	RESISTOR	68KΩ,1/16W
R20	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R21	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R22	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R24	NVP1201-222N	V RESISTOR,OFFSET	2.2KΩ,1/2W
R27	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R28	NVP1201-334N	V RESISTOR,GAIN	330KΩ,1/2W
R29	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R30	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R31	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R32	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R33	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R35	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R36	NRSA63J-681N	RESISTOR	680Ω,1/16W
R37	NRSA63J-331N	RESISTOR	330Ω,1/16W
R39	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R40	NRSA63J-391N	RESISTOR	390Ω,1/16W
R41	NRSA63J-271N	RESISTOR	270Ω,1/16W
R43	NRSA63J-681N	RESISTOR	680Ω,1/16W
R44	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R45	NRSA63J-471N	RESISTOR	470Ω,1/16W
R46	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R47	NRSA63J-683N	RESISTOR	68KΩ,1/16W
R48	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R49	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R50	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R51	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R52	NRSA63J-5R6N	RESISTOR	5.6Ω,1/16W
R53	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R54	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R55	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R56	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R57	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R58	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R59	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R60	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R61	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R62	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R63	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R64	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R65	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R66	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R67	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R68	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R69	QRSA08J-0R0	RESISTOR	0Ω,1/10W
R71	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R72	NRSA63J-471N	RESISTOR	470Ω,1/16W
R73	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R75	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R76	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R77	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R78	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R79	NRSA63J-203N	RESISTOR	20KΩ,1/16W
R80	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R81	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R86	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R87	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R89	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R90	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R91	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R92	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R93	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R94	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R95	NRSA63J-221N	RESISTOR	220Ω,1/16W
R96	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R97	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R99	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R101	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R102	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R103	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R104	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R105	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R106	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R107	NVP1201-222N	V RESISTOR,EE LEVEL	2.2KΩ,1/2W
R108	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R109	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R110	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R111	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R112	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R113	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R114	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R115	NRSA63J-103N	RESISTOR	10KΩ,1/16W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R116	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R117	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R118	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R119	NRSA63J-181N	RESISTOR	180Ω,1/16W
R130	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
C1	NEH30JM-226N	E CAPACITOR	22μF,6.3V
C2	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C3	NCB31EK-103A	CAPACITOR	0.01μF,25V
C4	NEH30JM-226N	E CAPACITOR	22μF,6.3V
C5	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C6	NCR21CK-473A	CAPACITOR	0.047μF,16V
C7	NCR21CK-473A	CAPACITOR	0.047μF,16V
C8	NEE20GM-475RS	TANTAL CAPACITOR	4.7μF,4.0V
C9	NCR21CK-473A	CAPACITOR	0.047μF,16V
C10	NCT07CH-101A	CAPACITOR	100PF
C11	NCR31CK-223A	CAPACITOR	0.022μF,16V
C12	NCR21CK-473A	CAPACITOR	0.047μF,16V
C13	NCR31CK-223A	CAPACITOR	0.022μF,16V
C14	NCR21CK-473A	CAPACITOR	0.047μF,16V
C15	NCR31CK-223A	CAPACITOR	0.022μF,16V
C16	NCR21CK-473A	CAPACITOR	0.047μF,16V
C17	NCT07CH-101A	CAPACITOR	100PF
C18	QCYA1HK-273	CAPACITOR	0.027μF,50V
C19	NCT07CH-101A	CAPACITOR	100PF
C20	QCYA1HK-273	CAPACITOR	0.027μF,50V
C21	QCYA1HK-273	CAPACITOR	0.027μF,50V
C22	QCYA1HK-103	CAPACITOR	0.01μF,50V
C23	NCT07CH-121A	CAPACITOR	120PF
C24	NCT07CH-151A	CAPACITOR	150PF
C25	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C26	NCT07CH-220A	CAPACITOR	22PF
C27	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C28	NCT07CH-330A	CAPACITOR	33PF
C29	NCT07CH-330A	CAPACITOR	33PF
C30	NCB31EK-103A	CAPACITOR	0.01μF,25V
C31	NCT07CH-121A	CAPACITOR	120PF
C32	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C33	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C34	NCT07CH-151A	CAPACITOR	150PF
C35	NCT07CH-151A	CAPACITOR	150PF
C36	NCT07CH-151A	CAPACITOR	150PF
C37	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C40	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C41	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C43	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C44	QER41CM-106	E CAPACITOR	10μF,16V
C45	NEA20JM-226N	E CAPACITOR	22μF,6.3V
C46	NEE21CM-105RS	TANTAL CAPACITOR	1μF,16V
C47	NCB31EK-103A	CAPACITOR	0.01μF,25V
C48	NCB31EK-103A	CAPACITOR	0.01μF,25V
C50	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C51	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C52	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C53	NCF31CZ-104A	CAPACITOR	0.1μF,16V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C54	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C55	NCB31EK-103A	CAPACITOR	0.01μF,25V
C77	NCB31EK-103A	CAPACITOR	0.01μF,25V
C78	QCFA1CZ-105	CAPACITOR	1μF,16V
C79	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C80	NCF31CZ-104A	CAPACITOR	0.1μF,16V
L1	YU40740-470K	COIL	47μH
L2	YU40740-220K	COIL	22μH
L3	YU40740-470K	COIL	47μH
L4	PU58201-330K	COIL	33μH
L5	PU58201-121K	COIL	120μH
BPF1	YU41493-2	BAND PASS FILTER	
BPF2	YU41555-2	BAND PASS FILTER	
⚠ X1	PEVB0362-P	C RESONATER	
SPC1	PU59915-102	SPACER	
SPC2	YQM30029-46	SPACER	
TP1	YU40581	TEST PIN,HALL AMP OUT	
CN-51	YU41359-16	CAP HOUSING,(BOARD TO BOARD)	
CN-52	YU41359-6	CAP HOUSING,(BOARD TO BOARD)	
CN-53	YU41356-4	CAP HOUSING	
CN-54	YU41356-4	CAP HOUSING	
CN-55	YU41356-3	CAP HOUSING	
CN-56	YU41356-2	CAP HOUSING	
CN-57	YU41356-3	CAP HOUSING	
CN-58	YU41356-4	CAP HOUSING	
CN-59	YU41356-4	CAP HOUSING	
CN-60	YU41356-4	CAP HOUSING	
⚠ CP1	ICP-F10	CIRCUIT PROTECTOR	

****

TALLY BOARD ASSEMBLY <16>

PWBA	YB20366B	TALLY BOARD ASSY
D1	SLH-34VC3F	LE DIODE

****

JUNCTION BOARD ASSEMBLY <17>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	YB20367B-01	JUNCTION BOARD ASSY
CN-1	PU58655-2	CAP HOUSING
CN-2	PEMC0793-9	CAP HOUSING
CN-3	YU40029-107	CAP HOUSING

****

DISPLAY BOARD ASSEMBLY <18>

PWBA	YB20368C-03	DISPLAY BOARD ASSY	
R1	QRSA08J-152	RESISTOR	1.5KΩ,1/10W
R2	QRSA08J-182Y	RESISTOR	1.8KΩ,1/10W
SW1	YU41702	SLIDE SWITCH,LONG/NORMAL	
SW2	YU41703	TACT SWITCH,D/T SET(-)	
SW3	YU41703	TACT SWITCH,D/T SET(+)	
SW4	YU41703	TACT SWITCH,D/T SELECT	
CN-1	PEMC0793-8	CAP HOUSING	

****

DRUM BOARD <40>

PWB	YDM3055	UPPER DRUM BOARD

****

E.VF BOARD ASSEMBLY <50>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YU30407-101	E.VF BOARD ASSY	
	IC01	AN2514S	IC	
⚠	IC02	AN78L05	IC,RG1	
	Q01	2SA1163-BL	TRANSISTOR	
⚠	Q02	2SD1898T100R	TRANSISTOR	
	D01	ERA22-10	DIODE	
	D02	MA152WA	DIODE	
	R01	QRSA08J-104Y	RESISTOR	100KΩ,1/10W
	R02	QRSA08J-474Y	RESISTOR	470KΩ,1/10W
	R03	QRSA08J-152Y	RESISTOR	1.5KΩ,1/10W
	R05	QRSA08G-363Y	RESISTOR	36KΩ,1/10W
	R06	QRSA08J-182Y	RESISTOR	1.8KΩ,1/10W
	R07	QRSA08J-101Y	RESISTOR	100Ω,1/10W
	R09	QRSA08J-3R9Y	RESISTOR	3.9Ω,1/10W
	R10	QRSA08J-561Y	RESISTOR	560Ω,1/10W
	R11	QRSA08J-222Y	RESISTOR	2.2KΩ,1/10W
	R12	QRSA08J-562Y	RESISTOR	5.6KΩ,1/10W
	R13	QRSA08J-273Y	RESISTOR	27KΩ,1/10W
	R14	QRSA08J-472Y	RESISTOR	4.7KΩ,1/10W
	R15	QRSA08J-471Y	RESISTOR	470Ω,1/10W
	R16	QRSA08J-184Y	RESISTOR	180KΩ,1/10W
	R17	QRSA08J-105Y	RESISTOR	1MΩ,1/10W
	R18	QRSA08J-105Y	RESISTOR	1MΩ,1/10W
	R19	QRSA08J-225Y	RESISTOR	2.2MΩ,1/10W
	R20	QRSA08J-225Y	RESISTOR	2.2MΩ,1/10W
	R21	QRSA08J-105Y	RESISTOR	1MΩ,1/10W
	R22	QRSA08J-222Y	RESISTOR	2.2KΩ,1/10W
	R23	QRSA08J-330Y	RESISTOR	33Ω,1/10W
	R24	QRSA08J-103Y	RESISTOR	10KΩ,1/10W
	R30	QRSA08J-564Y	RESISTOR	560KΩ,1/10W
	R31	QRSA08J-102Y	RESISTOR	1KΩ,1/10W
	R32	QRSA08J-474Y	RESISTOR	470KΩ,1/10W
	R33	QRSA08J-472Y	RESISTOR	4.7KΩ,1/10W
	VR01	YU30407-111	V RESISTOR,H.HOLD	
	VR02	YU30407-112	V RESISTOR,V.SIZE	
	VR03	YU30407-118	V RESISTOR,BRIGHT	
	VR04	YU30407-119	V RESISTOR,FOCUS	
	C01	QEK40JM-227	E CAPACITOR	220µF,6.3V
	C02	NEH31HM-105N	E CAPACITOR	1µF,50V
	C03	QCYA1EK-223	CAPACITOR	0.022µF,25V
	C05	QCF81EZ-224	CAPACITOR	0.22µF,25V
	C06	QEF81VM-104	TANTAL CAPACITOR	0.1µF,35V
	C07	QCSA1HJ-680	CAPACITOR	68PF,50V
	C08	QCYA1HK-104	CAPACITOR	0.1µF,50V
	C09	YU30407-123	E CAPACITOR	0.012µF
	C10	QCYA1EK-393	CAPACITOR	0.039µF,25V
	C12	PU36332-106	CAPACITOR	10µF
	C13	QEKA1HM-476	E CAPACITOR	47µF,50V
	C14	YU30407-124	CAPACITOR	0.12µF
	C15	PU36332-109	E CAPACITOR	0.0010F
	C18	QCSA1HJ-121	CAPACITOR	120PF,50V
	C20	PU36332-109	E CAPACITOR	0.0010F
	C21	QCYA1EK-103	CAPACITOR	0.01µF,25V
	C22	QCYA1EK-562	CAPACITOR	0.0056µF,25V
	C23	QCYA1EK-103	CAPACITOR	0.01µF,25V
	C24	PU36332-108	E CAPACITOR	1000µF
⚠	L01	YU30407-114	H.L.COIL	
	L02	YU30407-115	INDUCTOR	
	SW01	YU30407-122	SWITCH	
	TH01	YU30407-113	THERMISTOR	
⚠	T01	YU30407-116	F.B.T	
	CO4	QEJ40JM-476	TANTAL CAPACITOR	47µF,6.3V
	WR1	YU30407-120	VF CABLE	
	WR2	YU30407-117	CRT SOCKET ASSY	
	CN1	YU40095-5	CAP HOUSING,P01	
	CN2	YU30407-121	CAP HOUSING,P02	
	CN3	YU40096-2	CAP HOUSING,P03	
	CN4	YU40095-2	CAP HOUSING,P04	

SECTION 8
TECHNICAL INFORMATIONS

8.1 MECHACON CPU ($\boxed{0}$ $\boxed{1}$ VTR IC301) pin function

Pin No.	Symbol	Label	IN/OUT	Contents
1	P63	$\overline{\text{V. EE}}$	OUT	VIDEO EE ⟨L⟩/PB ⟨H⟩
2	P62	$\overline{\text{V. REC}}$	OUT	VIDEO REG (L)
3	P61	PWR LED	OUT	POWER LED ON ⟨L⟩
4	P60	NC	OUT	Not used
5	AN7	CLOG INH	IN	H: No CLOG CHECK
6	AN6	EMG REQ	IN	H: Reg SHORT → POWER OFF
7	AN5	BATT CHK	IN	5.55 V > ALARM, 5.40 V > POWER OFF
8	AN4	DEW SENS	IN	FOR DEW DETECT
9	AN3	AVG FM	IN	FOR DIGITAL TRACKING and CLOG CHECK
10	AN2	KEY SW-B	IN	OPERATION SW
11	AN1	END SENSE	IN	Tape End DETECT
12	AN0	KEY SW-A	IN	OPERATION SW
13	P71	S. SDATA	OUT	SERVO SERIAL DATA
14	P70	S. SCLK	OUT	SERVO SERIAL CLOCK
15	P37	C. SRDY	IN	CAMERA SERIAL READY (L)
16	SCLK	C. SCLK	OUT	CAMERA SERIAL DATA TRANSFER CLOCK
17	SOUT	C. SSD	OUT	SERIAL DATA TRANSMISSION TO CAMERA
18	SIN	C. SRD	IN	SERIAL DATA FROM CAMERA
19	CNTR	CAP FG	IN	FOR TAPE REMAIN and PB SP/EP DETECT
20	$\overline{\text{INTZ}}$	KEY SW-C	IN	PWR, EJECT, REC SAFE SW
21	P31	GND	IN	Not used
22	P30	$\overline{\text{S. LOCK}}$	IN	SERVO LOCK (L)
23	$\overline{\text{INT1}}$	DRUM FF	IN	DRUM ROTATION DETECT
24	CNVss	GND	IN	
25	$\overline{\text{RESET}}$	$\overline{\text{RESET}}$	IN	POWER ON RESET (L)
26	Xin	4MHz	IN	} CPU CLOCK
27	Xout	4MHz	OUT	
28	φ	NC	OUT	
29	Vss	GND	IN	
30	ED7	MODE-D	IN	REC START/STOP TIMING DETECT
31	ED6	PB CTL PULSE	IN	PB SP/EP DETECT
32	ED5	$\overline{\text{REC SAFE SW}}$	IN	ON (L)/OFF (H)
33	ED4	SUP SENS	IN	SUPPLY REEL ROTATION and TAPE REMAIN DET
34	P53	TU SENS	IN	TU REEL ROTATION DETECT
35	P52	$\overline{\text{POWER SW}}$	IN	ON ⟨L⟩/OFF ⟨H⟩
36	P51	$\overline{\text{EJECT SW}}$	IN	ON ⟨L⟩/OFF ⟨H⟩
37	P50	$\overline{\text{TRG SW}}$	IN	ON (L)/OFF (H)
38	P17	END LED ON ⟨H⟩	OUT	
39	P16	TAPE SELECT	IN	L : NORMAL, H : LONG LENGTH
40	P15	TRK A/M	IN	TRACKING L : MANUAL, H : AUTO
41	P14	TRK +	IN	TRACKING UP } MANLAL
42	P13	TRK −	IN	TRACKING DOWN
43	P12	CAM SW-A	IN	} MECHANISM MODE DETECT
44	P11	CAM SW-B	IN	
45	P10	CAS SW	IN	HOUSING LOCK (L)
46	P75	S. ENBL	IN	Not used
47	P74	TEST11	IN	(L, L) No EMERGENCY CHECK
48	P73	TEST00	IN	(H, H) NORMAL
49	P72	S. ENVELOP	OUT	CLOG CHECK (H)
50	P07	V. SW OFF	OUT	VIDEO HEAD SW OFF (H)
51	P06	SYNC CHANG	OUT	CAMERA ON (H) FOR OSD
52	P05	V PLS ON	OUT	V. PULSE ON ⟨H⟩
53	P04	$\overline{\text{V. REC MUTE}}$	OUT	VIDEO REC MUTE ⟨L⟩
54	P03	V. ALL MUTE	OUT	VIDEO OUTPUT MUTE ⟨H⟩
55	P01	V. PB	OUT	VIDEO PB ⟨H⟩/EE ⟨L⟩
56	P01	A. MUTE	OUT	AUDIO OUT MUTE ⟨H⟩

Pin No.	Symbol	Label	IN/OUT	Conterts
57	P00	A. PB	OUT	AUDIO PB (L)/EE (H)
58	P27	TRG OUT	OUT	REMOTE PAUSE (H)
59	P26	EP/SP	OUT	EP (H)/SP (L)
60	P25	ALM ON	OUT	TRIGGER ALARM ON (H)
61	P24	LD REV	OUT	MODE CTL MOTOR REV (H)
62	P23	LD FWD	OUT	MODE CTL MOTOR FWD (H)
63	P22	DECK PWR CTL	OUT	POWER ON (H)
64	P21	FEH ON	OUT	FLYING ERASE HEAD ON (H)
65	Vss	GND		
66	P20	CTL ERS	OUT	CTL ERASE HEAD ON (H)
67	Vcc	AL5V		
68	AVss	GND		
69	VREF	REG5V		
70	D/A	CAP M REF	OUT	FF, REW REEL DRIVE VOLTAGE OUTPUT
71	PWM	NC	OUT	
72	P64	A. BIAS	OUT	AUDIO REC BIAS ON (H)

8.2 BASIC OPERATIONS OF MECHACPN AND SENSORS

Tape end detection is operated by detecting the trailer tape in the normal rotation*. When it is detected, the mechanism mode is shifted to the Unloading-Stop mode. Detection of the trailer tape is performed by the end sensor.
Tape start** (beginning of tape) detection is operated in the reverse rotation***. When the tape start is detected, the mode is shifted to the Unloading-Stop mode.

* Normal rotation is used for six kinds of operations such as Play, Search FF, REC, FF, Retake FF, and Loading.
** Tape start is detected by the reel sensor.
***Reverse rotation is used for three kinds of operations such as REW, Search REW, Retake REW.

Drum rotation detection is operated in the modes in which the drum must be rotating. When the drum rotation stops for about 2 seconds, the mode is shifted to the Stop mode and the Emergency indication is displayed.
Reel rotation detection is operated in the modes in which the reel must be rotating. (See the Reference-1 below.)
When reel rotation is not detected and it is judged as it is stopping, the mode is shifted to the Stop mode and the Emergency indication is displayed.
Reel rotation is detected by the supply reel sensor and the take-up reel sensor, and it takes a different time to judge the reel stopping by operation mode as shown in the following.

- Reference-1

	Supply reel sensor	Take-up reel sensor
PB/REC	10.0 sec	4.2 sec
Preroll	4.2 sec	10.0 sec
Search FF	2.0 sec	2.0 sec
Search REW	2.0 sec	2.0 sec

Capstan rotation detection is operated in the modes in which the reel must be rotating. When no output is supplied from the CAP. FG, the mode is shifted to the Stop mode and the Emergency indication is displayed.
Regarding the CTL pulse, when no input of VISS information is confirmed, the mode is shifted to the Stop mode and the Emergency indication is displayed.

● Overtime operation

Loading overtime is determined when the loading operation does not finish within 10 sec after it started. If so, the mode is shifted to the Stop mode with the Emergency indication. (This is the same for the Unloading operation.)

● Power-saving operation

When any operation is not done in the Stop mode for 5 minutes, the power is automatically turned off.
When further operation is not performed in the Pause mode for 5 minutes, the mode is once shifted to the Stop mode and then enters the power-off mode another 5 minutes after that.
When no operation is done in the REC Pause mode for 5 minutes, the mode is shifted to the REC Lock mode with power-off.

8.3 EMERGENCY DISPLAY

Whenever some abnoral signal is supplied to mechacon CPU, the POWER LED will be flickered and an error number (E05, for example) displayed on the electronic view finder.

E. VF DISPLAY	Symptom	Mode when observed	Resulting mode
E 06	CAPSTAN FG input absent	EDIT	STOP
E 05	PB CTL PULSE input absent	EDIT	STOP
E 04	DRUM FF input absent	DRUM rotation	STOP
E 03	REEL FG input absent	REC, PLAY, SEARCH FF	STOP
E 02	Mode control motor rotates for more than 10 sec. without shift to next mode.	UNLOADING	Mode continues
E 01	Mode control motor rotates for more than 10 sec. without shift to next mode.	LOADING	Mode continues

Emergency mode : Indication for 5 minutes, then power OFF
Port states : Same as Stop mode
Effective key : POWER
Shifted mode : Power OFF

8.4 SERVO LSI ($\boxed{0}\boxed{1}$ VTR IC101) Pin function

Pin No.	Label	I/O	Description	Pin No.	Label	I/O	Description
1	ADV	O	Tracking correction pulse output	29	VDD	–	System power source
2	CAP CTL	O	Control mode switching (CPU/SERVO mode)	30	M-D	O	Drum phase monitor output
3	SP	O	Mode switching (SP mode) signal output	31	M-C	O	Capstan phase monitor output
4	FM EMV	I	Internal sync signal switching (sync/non-sync)	32	SEL 2	I	Setup terminal (Head setting)
5	CPU	O	Capstan phase control PWM output	33	SEL 1	I	(Same as above)
6	CFV	O	Capstan speed control PWM output	34	NC	–	NC
7	BRK	O	Capstan brake control	35	NC	–	NC
8	FWD	O	Normal/Reverse rotation of capstan	36	NC	–	NC
9	WIDE	O	CTL pulse rewrite control signal	37	NC	–	NC
10	WRITE	O	(Same as above)	38	NC	–	NC
11	DUTY	O	REC control duty control	39	D ON	O	Drum on input
12	TEST	O	TEST terminal (NC)	40	SW MM	I/O	PG MM terminal
13	FOSC	O	Reference signal input	41	D FG/PG	I	Drum PG/FG input
14	GND	–	GND	42	GND	–	GND
15	YNR	O	YNR pulse output	43	DPV	O	Drum phase control PWM output
16	VP ON	O	V pulse on/off mode control	44	DFV	O	Drum speed control PWM output
17	VP	O	V sync (false pulse) output	45	GD	O	NC
18	SYNC	I	V sync input	46	ASWD	O	Audio head switching pulse output (A SW D)
19	FRAME	I	Frame pulse input	47	ASWC	O	" (A SW C)
20	AV REC	I	Camera/External input mode switching	48	ASWB	O	" (A SW B)
21	S OUT	O	Servo lock control	49	ASWA	O	" (A SW A)
22	C FG	I	Capstan FG input	50	A FF	O	" (A FF)
23	CTL P	I	Control pulse input	51	VSWD	O	Video head switching pulse output (R SW D)
24	D FF	O	Drum flipflop	52	VSWC	O	" (V SW C)
25	S CLK	I	Serial data input	53	VSWB	O	" (V SW B)
26	S DATA	I	Data transfer clock input	54	VSWA	O	" (V SW A)
27	EP DL	–	NC	55	H FF	O	" (H FF)
28	PW ON	I	Reset terminal	56	V FF	O	" (V FF)

8.5 CAMERA CPU (1 1 CPU IC1) Pin function

Pin No.	Symbol	Label	IN/OUT	Contents								
1	DA3	WHITE BAL R GAIN CTL	OUT	RED LEVEL CONTROL								
2	DA2	WHITE BAL B GAIN CTL	OUT	BLUE LEVEL CONTROL								
3	DA1	COLD FL or WARM FL (H)	OUT	B-Y LEVEL DOWN WHEN FL MODE								
4	DA0	Y GAIN UP (L)	OUT	Y GAIN UP WHEN LOW LIGHT								
5	AN7	W. BAL R/G, B/G, YL	IN	WHITE BALANCE SENSOR VOLTAGE INPUT								
6	AN6	OPERATION SW4	IN	DATE/TIME SET (+), (−), SELECT								
7	AN5	OPERATION SW3	IN	DISPLAY, MODE, SHUTTER, FADER, FULL AUTO								
8	AN4	OPERATION SW2	IN	TITLE, COLOR, TITLE MEMORY, NEGA/POGI/CINEMA								
9	AN3	OPERATION SW1	IN	RESET, MEMORY, FOCUS								
10	AN2	GND	—									
11	AN1	GND	—									
12	AN0	GND	—									
13	INT3	GND	—									
14	INT2	FL FLICKER PULSE	IN	FOR FL FLICKER DETECT								
15	INT1	CAMERA POWER ON (L)	IN									
16	INT0	REG 5V DOWN (L)	IN	ENTER THE CPU STOP MODE								
17	SRDY2	AF READY (H)	IN									
18	SCLK2	AF SERIAL CLOCK	OUT	AF-CPU SERIAL DATA TRANSFER CLOCK								
19	SOUT2	AF SERIAL DATA	OUT	8 bits								
20	SIN2	AF SERIAL DATA	IN	8 bits								
21	SRDY1	S. READY (L)	OUT									
22	SCLK1	DECK SERIAL CLOCK	IN	DECK CPU SERIAL DATA TRANSFER CLOCK								
23	SOUT1	DECK SERIAL DATA	OUT	8 bita								
24	SIN1	DECK SERIAL DATA	IN	8 bits								
25	XCIN	32.768 KHz	IN	TIME & DATE CLOCK								
26	XCOUT	32.768 KHz	OUT									
27	CNVSS	GND	—									
28	φ	NC	—									
29	RESET	RESET (L)	IN									
30	XIN	4 MHz	IN	CPU CLOCK								
31	XOUT	4 MHz	OUT									
32	VSS	GND	—									
33	P27	IRIS CLOSE (H)	OUT	STOP or FF/REW (H)								
34	P26	JIG (L)	IN	FOR EVR ADJUSTER								
35	P25	TALLY LAMP ON (H)	OUT									
36	P24	RELL FG PULSE	IN	FOR E. VF TAPE COUNTER DISPLAY								
37	P23	REC MODE (L)	OUT									
38	P22	WB SENSOR CTL-1	OUT	WHITE BALANCE SENSOR OUTPUT SELECT								
39	P21	WB SENSOR CTL-2	OUT									
40	P20	WB SENSOR CTL-3	OUT									
41	P17	MEMORY S. DATA IN	IN	EEPROM READ DATA IN								
42	P16	MEMORY S. DATA OUT	OUT	EEPROM WRITE DATA OUT								
43	P15	MEMORY S. CLOCK	OUT	EEPROM SERIAL CLOCK								
44	P14	MEMORY CHIP SELECT (H)	OUT									
45	P13	TITLE CTL S. CLOCK	OUT	TITLE CONTROL DATA OUTPUT								
46	P12	TITLE CTL S. DATA	OUT									
47	P11	TITLE CTL CS (L)	OUT									
48	P10	TITLE S. RAM CS (H)	OUT	S. RAM BACK UP (L), TITLE MEMORY or TITLE ON (H)								
49	P07	FADE MODE-2	OUT	Not used								
50	P06	FEDE MODE-1	OUT									
				SHUTTER MODE	1/60	1/125	1/250	1/500	1/1000	1/2000	1/4000	1/100
51	P05	SHUTTER-3	OUT		L	L	L	L	H	H	H	H
52	P04	SHUTTER-2	OUT		L	L	H	H	L	L	H	H
53	P03	SHUTTER-1	OUT		L	H	L	H	L	H	L	H
54	P02	LOW LIGHT (L)	IN	IRIS OPEN (L)								

PIN No.	SYMBOL		IN/OUT	CONTENS
55	P01	L. BATT DOWN (L)	IN	FOR E. VF DISPLAY
56	P00	JIG ENABLE (H)	IN	FOR EVR ADJUSTER
57	P37	GND	—	
58	P36	GND	—	
59	P35	CINEMA MODE (H)	OUT	
60	P34	FL FLICKER PULSE	IN	FOR FL FLICKER DETECT
61	P33	(H)	IN	
62	P32	(L)	IN	
63	P31	CAMERA POWER ON (H)	OUT	
64	OUT2	FRING PULSE	OUT	FOR TIME & DATE DISPLAY
65	OUT1	NC	—	
66	I	NC	—	
67	B	CHARACTOR PULSE	OUT	FOR TIME & DATE DISPLAY
68	G	CHARACTOR PULSE	OUT	FOR E. VF DISPLAY
69	R	NC	IN	
70	OSC1	6MHz	IN	DISPLAY CLOCK OSC WITH BLANKING
71	OSC2	6MHz	OUT	
72	VCC	UNSW 5V	—	
73	VSS	GND	—	
74	VSYNC	VD	IN	
75	HSYNC	HD	IN	
76	AVCC	REG 5V	—	
77	AVSS	GND	—	
78	VREF	REG 5V	—	
79	DA5	VIDEO FADE	OUT	FADE CONTROL VOLTAGE OUTPUT
80	DA4	AUDIO FADE	OUT	

8.6 AUTO FOCUS CPU (1 5 AF IC3) Pin function

Pin No.	Symbol	Label	IN/OUT	Contents
1	ADC2	ZOOM ENCODER	IN	ZOOM LENS POSITION DETECT
2	ADC1	IRIS SENSOR	IN	IRIS SIZE DETECT
3	ADC0	AF SIGNAL	IN	CONTRAST VOLTAGE
4	VREF −	1V	—	
5	S/H2	ADSH	—	S/H CAPACITOR FOR A/D CONV
6	AVSS	GND	—	
7	P67	NC	—	
8	P66	AF MOTOR PS (H)	OUT	POWER SAVE CTL WHEN MOTOR STOP
9	P65	AF V-WINDOW PULSE	OUT	V. BLANKING PULSE OUTPUT FOR AF SIGNAL
10	P64	NC	—	
11	P63	AF MOTOR FAR (L)	OUT	AF MOTOR DRIVE
12	P62	AF MOTOR NEAR (L)	OUT	
13	P61	AF PROCESSER CLK	OUT	AF PROCESSER CH & GAIN DATA 13 bits
14	P60	AF PROCESSER DATA	OUT	
15	EX1	GND	—	
16	P57	ZOOM WIDE (H)	OUT	ZOOM MOTOR DRIVE
17	P56	ZOOM TELE (H)	OUT	
18	P55	NC	—	
19	P54	∞ SENSOR ON (L)	OUT	LOW WHEN MASTER LENS ∞ POSITION CHECK
20	P53	SERIAL READY (H)	OUT	
21	P52	NC	—	
22	P51	NC	—	
23	P50	NC	—	
24	RST −	RESET (L)	IN	
25	OSC1	8MHz	IN	SYSTEM CLOCK
26	OSC2	8MHz	OUT	
27	VSS	GND	—	
28	P23	NC	—	
29	P27	HD	IN	
30	P26	NC	—	
31	P25	NC	—	
32	P24	VD	IN	
33	P22	AF H-WINDOW PULSE	OUT	H. BLANKING PULSE OUTPUT FOR AF SIGNAL
34	P21	NC	—	
35	P20	HD	IN	
36	P07	CPU-AF S. CLOCK	IN	SERIAL DATA TRANSFER CLOCK
37	P06	CPU-AF S. DATA	IN	8 bits
38	P05	CPU-AF S.DATA	OUT	8 bits
39	P01	NC	—	
40	P00	NC	—	
41	P47	FAR SW ON (L)	IN	
42	P46	NEAR SW ON (L)	IN	
43	P45	WIDE SW ON (L)	IN	
44	P44	TELE SW ON (L)	IN	
45	P43	ADJUST MODE (L)	IN	
46	P42	V. REC (L)	IN	
47	P41	(H)	IN	
48	P40	(H)	IN	
49	P77	NC	—	
50	P76	NC	—	
51	P75	NC	—	
52	P74	NC	—	
53	P73	NC	—	
54	P72	NC	—	
55	P71	NC	—	
56	P70	NC	—	

Pin No.	Symbol	Label	IN/OUT	Contents
57	VDD	LOGIC 5V	—	FOR DIGITAL CIRCUIT
58	AVDD	ANALOG 5V	—	FOR ANALOG CIRCUIT
59	VREF+	4V	—	FOR D/A CONV and A/D CONV
60	DAC1	NC	—	
61	S/H1	DASH1	—	S/H CAPACITOR FOR D/A CONV-1
62	DAC0	ZOOM SPEED	OUT	SPEED UP WHEN AUTO MACHRO
63	S/H0	DASH0	—	S/H CAPACITOR FOR D/A CONV-0
64	ADC3	∞ SENSOR	IN	MASTER LENS ∞ POSITION DETECT